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Scalable Roadmap for Improving Foundational Numeracy Outcomes in Pre-primary and Primary schools.

Evaluation of Previous Large-scale Programmes in Kenya

2026

SCALABLE ROADMAP FOR IMPROVING FOUNDATIONAL NUMERACY OUTCOMES IN PRE-PRIMARY AND PRIMARY SCHOOLS.

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LIST OF ABBREVIATIONS

APHRC	African Population and Health Research Center
CBC	Competency-Based Curriculum
CBE	Competency-Based Education
CEMASTE	Centre for Mathematics, Science and Technology Education in Africa
CIFF	Children's Investment Fund Foundation
CPD	Continuous Professional Development
CSF	Central Square Foundation
CSO	Curriculum Support Officer
DFID	Department for International Development
DIM	Direct Instruction Method
ECDE	Early Childhood Development Education
ECD	Early Childhood Development
EGMA	Early Grade Mathematics Assessment
EGRA	Early Grade Reading Assessment
GKA	Ganitha Kalika Andolana
GPE	Global Partnership for Education
ICT	Information and Communication Technology
IES	Institute of Education Sciences
KCPE	Kenya Certificate of Primary Education
KEMI	Kenya Education Management Institute
KICD	Kenya Institute of Curriculum Development
KISE	Kenya Institute of Special Education
KNEC	Kenya National Examinations Council
KNUT	Kenya National Union of Teachers
KPSEA	Kenya Primary School Education Assessment
KPEELP	Kenya Primary Education Equity in Learning Programme
M&E	Monitoring and Evaluation
MoE	Ministry of Education
NASMLA	National Assessment System for Monitoring Learner Achievement
NGO	Non-Governmental Organisation
PRIEDE	Primary Education Development Project
PRIMR	Primary Math and Reading Initiative
PWPER	Presidential Working Party on Education Reforms
RAMP	Reading and Mathematics Project
RTI	Research Triangle Institute
SEL	Social and Emotional Learning
TAC	Teacher Advisory Centre
TARL	Teaching at the Right Level
TPAD	Teacher Performance Appraisal and Development
TSC	Teachers Service Commission
TTC	Teacher Training College
UKAID	United Kingdom Aid
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

“The future of foundational numeracy lies in locally grounded, evidence-driven, and government-led solutions.”

This report presents an in-depth evaluation of large-scale foundational learning programmes in Kenya, focusing specifically on PRIEDE, Tusome, and Tayari, with the aim of drawing actionable lessons to inform the design of a scalable roadmap for improving early numeracy outcomes in pre-primary and primary schools. The analysis highlights the importance of foundational learning—particularly literacy, numeracy, and socio-emotional skills—as the cornerstone of lifelong educational success and national development. Despite Kenya’s commendable investments and achievements in this area, persistent gaps in learning outcomes remain, particularly in higher-order numeracy competencies, signalling the need for a re-examination of past interventions and the development of a sustainable and more impactful strategy moving forward.

The evaluation employed a qualitative design that combined document analysis of key programme reports and policy documents with insights from sixteen key informant interviews drawn from programme leads, Ministry of Education officials, curriculum developers, teachers, curriculum support officers, development partners, and global numeracy experts. This mixed evidence base provided a comprehensive understanding of the design, implementation, and outcomes of the three programmes.

The review established that the programmes shared several common design features. Each emphasised structured pedagogy, teacher training and continuous professional development, provision of high-quality instructional materials, and strong monitoring and evaluation frameworks. In addition, the use of technology, especially tablets, emerged as a powerful tool for monitoring teacher practices, collecting real-time classroom data, and providing feedback. Tusome concentrated primarily on literacy, scaling nationally and reaching over 7.6 million learners, while PRIEDE was more focused on numeracy, expanding to 23,000 schools and training more than 100,000 teachers. Tayari, on the other hand, was piloted in four counties with a broader scope that integrated school readiness, numeracy, literacy, socio-emotional learning, and health, demonstrating strong results in a randomised controlled trial.

The impact of the programmes was considerable, though varied in scope and emphasis. Tusome achieved significant gains in reducing the proportion of non-readers and improving reading fluency across the early grades, while PRIEDE contributed to measurable improvements in basic mathematical competencies. Tayari demonstrated that a holistic approach to school readiness, involving both cognitive and non-cognitive skills, significantly improved children’s preparedness for primary school, particularly in numeracy, where statistically meaningful gains were observed. Teachers across the three programmes reported higher confidence in delivering lessons, owing largely to the structured lesson plans and accessible materials provided. The embedding of lesson plans within teacher guides, though effective in easing workload, sometimes limited teacher creativity and adaptability in lesson preparation.

Sustainability emerged as a central concern in the evaluation. Tusome stands out as the most successful case of transition into government systems. The programme benefitted from long-term donor support, but more importantly, from progressive government co-financing and ownership, which ensured continuity beyond donor funding cycles. The government’s investment in printing and distributing millions of books and its integration of programme elements into the national education system illustrate a viable pathway for scaling and sustaining

foundational learning initiatives. PRIEDE and Tayari also achieved important outcomes, but their sustainability was less assured, largely due to dependence on external financing, uneven teacher preparedness for Competency-Based Education (CBE), and logistical challenges in the distribution of resources.

The programmes also attempted to address issues of equity and inclusion. Tusome incorporated adaptations for learners with visual and hearing impairments, while PRIEDE extended its reach to both formal and non-formal schools. Tayari included children in both public and low-cost private early childhood centres. However, disparities remained, especially in providing equitable access to resources for underserved populations, as well as achieving uniformity across counties and between rural and urban areas.

The evaluation further identified several cross-cutting lessons. Government leadership and integration into existing systems are crucial for sustainability. Teacher buy-in is greatly enhanced when programmes reduce workload and provide clear, user-friendly materials. Cost-effectiveness is an essential factor, as demonstrated by Tayari's low per-learner cost model and Tusome's strategic book distribution. At the same time, challenges were evident, including over-prescriptive teaching models that constrained innovation, weak succession planning, logistical delays, teacher turnover, and insufficient attention to higher-order numeracy and socio-emotional learning.

In conclusion, the review highlights both successes and shortcomings of Kenya's past large-scale foundational learning programmes. What worked well included structured pedagogy, continuous teacher support, universal access to high-quality instructional materials, data-driven decision-making, and strong government commitment. What did not work included inadequate preparation for CBE alignment, overreliance on donor funding, insufficient integration of socio-emotional and higher-order skills, and gaps in inclusivity and equity.

The report recommends the adoption of a more flexible, evidence-based approach to pedagogy that can adapt to diverse learner needs while remaining aligned with the CBE framework. Sustained teacher mentoring and professional development must be prioritised, alongside

universal access to cost-effective, high-quality instructional materials. Government ownership and financing should be further strengthened to reduce dependency on donor funding, and programme designs must deliberately incorporate equity-focused measures to address disparities across regions and learner groups. Additionally, integrating socio-emotional learning, leveraging technology for real-time monitoring, and building localised solutions that reflect cultural and contextual realities will be crucial for ensuring sustainable and impactful improvements in foundational numeracy outcomes.

Ultimately, the lessons drawn from PRIEDE, Tusome, and Tayari illustrate that large-scale foundational learning programmes can succeed when they are designed with government ownership at their core, supported by strong teacher training, anchored in evidence-based pedagogy, and implemented in ways that are cost-effective, inclusive, and adaptable to the evolving needs of the education system.

“Disparities persisted in equitable access to resources across regions and learner groups.”

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INTRODUCTION

Foundational learning, encompassing basic literacy, numeracy, and socio-emotional skills, is crucial for a child's overall development and future success. These foundational skills act as building blocks for future learning, enabling individuals to become productive and engaged citizens. Without a solid foundation, learners are at a higher risk of academic failure, diminished self-confidence, and long-term socio-economic disadvantage. Beyond academics, foundational learning plays a critical role in shaping cognitive abilities, critical thinking, and lifelong learning habits. Investing in strong foundational learning is not only an educational imperative but also a strategic pathway to building more informed, resilient, and empowered societies (World Bank, 2021; UNESCO, 2021).

Kenya has made commendable efforts to strengthen foundational learning, particularly in literacy and numeracy, through national education policies and targeted interventions. The Constitution (2010) and the Basic Education Act (2013) affirm the right to free and compulsory basic education, laying a strong policy foundation. In response, major programmes such as Tusome, PRIEDE, PRIMR, and the Early Grade Mathematics Assessment (EGMA) have been implemented to improve instructional quality and learning outcomes in early grades. These initiatives have led to notable progress. For example, Tusome contributed to significant gains in reading fluency, while EGMA reported improvements in basic mathematical competencies (USAID, 2019; RTI International, 2012; World Bank, 2016; Republic of Kenya, 2013).

The Primary Math and Reading Initiative (PRIMR), implemented between 2011 and 2014, was a

programme designed to improve literacy and numeracy skills in Kenyan primary schools for Grade 1 and 2 learners in 1,384 primary schools. The programme was funded by USAID and DFID. The programme tested various strategies to determine the most cost-effective approaches for improving foundational learning skills. Within PRIMR schools, Teacher Advisory Centres (TAC) tutors played two key roles: serving as primary trainers for teachers and acting as instructional supervisors, providing regular feedback to teachers. Both the TAC tutors and their counterparts from the private sector (instructional coaches working in PRIMR's non-formal schools) were trained to fulfil these responsibilities. They were equipped with classroom observation tools to systematically document teaching quality, strengths, and areas needing improvement during their school visits. Following each visit, TAC tutors and instructional coaches provided personalised feedback to teachers, offering constructive suggestions for enhancing instructional practices (USAID, 2014).

The Primary Education Development Project (PRIEDE), a national scale-up of the numeracy component of the PRIMR programme, was funded by the Global Partnership for Education and implemented between 2015 and 2021. The project provided essential numeracy materials and teacher training. PRIEDE was a comprehensive programme that aimed to improve teacher competencies for developing early-grade numeracy (Grades 1 and 2) through training and enhancing teacher pedagogical supervision. PRIEDE led to an overall improvement in foundational numeracy for early-grade learners, with a majority of the learners attaining the national achievement benchmark.

Following the success of the PRIMR initiative in improving literacy and numeracy skills in Grades 1 and 2, the Tusome (Let's Read) programme was launched to scale these gains nationally. Tusome was led by the Ministry of Education (MoE) and funded by USAID, with RTI International serving as the primary implementing partner, supported by several other organisations. The Tusome programme was formally launched in Kenya in January 2015, with implementation beginning that same year. It initially focused on Grade 1 learners, adding Grades 2 and 3 in subsequent years. The programme aimed to improve early-grade reading and was a scaled-up version of the Primary Mathematics and Reading (PRIMR) initiative. The programme led to significant gains in reading skills, reducing non-readers alongside notable increases in fluent and emergent readers across Grades 1 and 2.

The Tayari Early Childhood Development and Education (ECDE) programme in Kenya was implemented as a four-year pilot study from 2014 to 2018. It was a joint effort between the Kenyan government (Ministry of Education, Science and Technology and County Governments) and the Research Triangle Institute (RTI) International, with funding from the Children's Investment Fund Foundation (CIFF). The programme aimed

to develop a cost-effective and scalable model for ECDE to prepare children for primary school. The programme's impact included improved learning outcomes with a focus on cognitive, physical, social and emotional developments and better transitions to primary school.

However, despite these achievements, recent evaluations continue to highlight persistent low learning outcomes, especially in higher-level cognitive skills in numeracy. The Uwezo (2021) and Global Schools Forum (2024) reports show that many learners still struggle with foundational competencies, while the NASMLA (2022) results reveal that 94.6 per cent of learners could not apply arithmetic skills (Level 4 in Mathematics), and nearly half failed basic operations like multiplication and division. Moreover, KPSEA results from 2022 to 2024 show a sharp decline in performance across Mathematics, English, and Kiswahili, suggesting that early learning gaps are widening.

This component involved a critical evaluation of the design, implementation, and outcomes of previous large-scale education programmes in Kenya, specifically PRIEDE, Tusome, and Tayari, to draw lessons on scale, impact, and sustainability.





1 LITERATURE REVIEW

1.1 Large Scale Foundation Programmes

1.1.1 Global Perspectives

In countries such as Finland and the United States, early numeracy has been strongly embedded within education reforms. Finland's education system, widely recognised for excellence in foundational learning, employs child-centred, play-based methodologies in early grades, ensuring a balance between numeracy concept development and social-emotional learning. A study by Sahlberg (2021) highlights that Finnish education emphasises conceptual understanding over rote learning, with well-trained teachers who receive continuous professional development and autonomy to adapt instruction to student needs. The Finnish model demonstrates sustainability through strong institutional support, continuous teacher training, and stable public funding.

In the United States, programmes such as Math Recovery and Number Rockets, funded through federal and state education departments, focus on targeted intervention for struggling students. According to the U.S. Institute of Education Sciences (IES, 2022), these programmes have shown measurable improvements in early numeracy proficiency through individualised support, frequent formative assessments, and the integration of instructional coaching. Key to their scale and sustainability is the development of robust instructional materials, educator support systems, and data-driven monitoring frameworks.

Similarly, in Singapore, foundational numeracy is integrated into a well-structured national curriculum, emphasising mastery and problem-solving from early grades. Research by Tan et al. (2020) illustrates how Singapore's spiral curriculum supports continuity in concept development, supported by systematic teacher capacity-building and the use of lesson study models to share best practices.

In low- and middle-income countries, the Numeracy at Scale project has played a key role in improving foundational mathematics skills among early-grade learners. The project focuses on identifying and implementing cost-effective, scalable interventions that can enhance numeracy outcomes across diverse educational settings. It emphasises the use of structured pedagogical approaches, teacher professional development, assessment-driven instruction, and alignment with national curricula. By partnering with governments, NGOs, and research institutions, Numeracy at Scale seeks to generate robust evidence on what works in improving early numeracy and to support education systems in adopting data-informed strategies for sustained impact (RTI International, 2023).

The Numeracy at Scale initiative in India, documented under RTI's Learning at Scale study, illustrates how structured design, strong system-level integration, and deliberate sustainability mechanisms can generate measurable impact on foundational numeracy outcomes. The design of the interventions emphasised activity-based pedagogy following a concrete-representational-abstract progression, curriculum-aligned teaching and learning materials, structured

teacher guides, and regular use of formative assessments to ensure that instruction matched children's learning levels. Complementary models, such as community tutoring, after-school support, and low-cost digital practice, were also applied to strengthen learning while reducing teacher workload (RTI International, 2023; Stern et al., 2023).

System-level integration was achieved through alignment with state curricula, teacher professional development structures, and partnerships with district institutes and state education departments. This deliberate collaboration enabled the smooth adoption of interventions within government systems and facilitated scalability. In parallel, sustainability was built into programme design by focusing resources on one-time curriculum and material development rather than recurring external costs, embedding mentoring and coaching into existing supervisory cycles, and creating community engagement activities—such as mathematics contests and volunteer networks—that reinforced ownership at the local level (RTI International, 2023; Akshara Foundation, n.d.).

The impact of these efforts has been significant. Evaluations report measurable improvements in foundational numeracy learning outcomes, with Ganitha Kalika Andolana (GKA) reaching millions of children across several Indian states, and Nanhi Kali demonstrating positive programme-level gains in learner performance (RTI International, 2023; RTI International SharEd, 2023). The broader Learning at Scale synthesis emphasises that, beyond improving outcomes, the key achievement of the Numeracy at Scale project in India has been the institutionalisation of practices within government systems, ensuring potential for long-term sustainability and systemic transformation (Stern et al., 2025).

The Reading and Mathematics Project (RAMP) in Jordan, jointly supported by USAID and UKAID, applied a structured instructional model that included scripted teacher guides, learner workbooks, targeted remediation, continuous teacher professional development, and classroom-ready resources to strengthen early-grade numeracy at scale. At the systems level, RAMP was deliberately integrated into the Ministry of Education (MoE) structures through cascaded training, school-based coaching, enhanced assessment systems, and the embedding of monitoring mechanisms within MoE workflows. Sustainability measures focused on institutionalisation, whereby materials,

monitoring tools, and accountability processes were transferred to the MoE, alongside capacity-building for supervisors and school leaders to ensure long-term implementation. Evidence from the 2023 national survey, covering approximately 2,181 schools and 244,389 Grade 2 and Grade 3 students, indicated significant gains in learning outcomes. Grade 2 reading proficiency in MoE traditional schools rose from 10.7 per cent in 2021 to 42.4 per cent in 2023, while mathematics scores showed measurable, though comparatively modest, improvements. Despite implementation challenges such as late delivery of some materials and uneven coaching coverage, the RAMP experience highlights how careful programme design, system-level integration, and sustainability planning can deliver large-scale improvements in foundational learning outcomes in Jordan.

1.1.2 Regional Experiences in Sub-Saharan Africa

In South Africa, the Early Grade Mathematics (EGM) programme under the Primary Education Intervention (2015–2019) focused on developing teacher guides and learner workbooks aligned with the national curriculum. According to Spaul and Kotze (2019), despite substantial government investment, impact on learner performance was limited due to challenges in fidelity of implementation, teacher capacity, and instructional time. Fidelity of implementation was hindered by inconsistencies in how teachers adhered to the prescribed curriculum and utilised the provided materials. Teacher capacity issues arose from insufficient training and professional development opportunities, which left many educators ill-equipped to effectively deliver the programme. Additionally, instructional time was often compromised by factors such as large class sizes, administrative duties, and socio-economic challenges faced by learners. Lessons from this initiative underscore the importance of ongoing teacher mentoring and rigorous monitoring systems for achieving scale and sustainability. Furthermore, the programme highlighted the need for a supportive infrastructure, including adequate resources and a conducive learning environment, to ensure that educational interventions can be implemented as intended and yield the desired outcomes.

In Nigeria, the Northern Education Initiative Plus (NEI+), funded by USAID, aimed to improve early-grade reading and mathematics through teacher training, community engagement, and development of learning materials in local

languages. The final performance evaluation revealed significant gains in learners' numeracy outcomes in intervention areas, largely attributed to integrated community support structures and teacher mentorship (USAID, 2021). However, challenges such as teacher shortages and insecurity in Northern regions hindered scale-up.

The Building Learning Foundations (BLF) project in Rwanda, funded by the UK Department for International Development (DFID), aimed to improve foundational literacy and numeracy skills among early-grade learners. The project was implemented in partnership with the Rwanda Education Board (REB) and focused on three key components: teacher development, learning materials, and system strengthening.

- **Teacher Development:** The BLF project placed a strong emphasis on enhancing teachers' capacity through continuous professional development. Teachers received training on effective pedagogical practices, classroom management, and the use of formative assessment to monitor student progress. The project also introduced teacher coaching and mentoring programmes, where experienced educators provided ongoing support and guidance to their peers.
- **Learning Materials:** To support effective teaching and learning, the BLF project developed and distributed high-quality instructional materials. These included teacher guides, student workbooks, and supplementary resources that were aligned with the national curriculum. The materials were designed to be user-friendly and culturally relevant, ensuring that they met the needs of both teachers and students.
- **System Strengthening:** The BLF project worked closely with the Rwanda Education Board to strengthen the overall education system. This involved improving data collection and analysis processes, enhancing school leadership and management, and promoting community engagement in education. The project also supported the development of policies and frameworks that aimed to sustain the gains made in foundational learning.

Impact and Sustainability: The BLF project had a significant impact on early-grade literacy and numeracy outcomes in Rwanda. According to an evaluation by RTI International (2019), the project led to measurable improvements in student performance, with gains in both reading

and mathematics. The sustainability of the project was ensured through strong government ownership and integration into existing education systems. The involvement of local communities and stakeholders also played a crucial role in maintaining the momentum of the project.

1.1.3 Kenyan Context

Kenya has implemented several large-scale interventions targeting early-grade literacy and numeracy, including PRIMR, PRIEDE, Tusome, and Tayari. Some of the key components of these programmes include: teacher capacity, instructional practice, and sociocultural influences.

The Primary Math and Reading (PRIMR) initiative in Kenya served as a foundational pilot programme aimed at addressing fundamental challenges in literacy and numeracy among early-grade learners. Implemented within both public and low-cost private educational settings, PRIMR introduced structured lesson plans, routine teacher coaching, and the integration of tablets to facilitate lesson planning and data collection. This initiative provided essential groundwork for subsequent large-scale interventions such as PRIEDE and Tusome by demonstrating measurable advances in student learning outcomes and offering critical insights into effective instructional practices, including the application of technology in the classroom. PRIMR's commitment to evidence-based strategies and its collaborative engagement with education stakeholders significantly informed national education policy and supported the expansion of successful interventions throughout Kenya.

The Primary Education Development (PRIEDE) project in Kenya was established to strengthen foundational numeracy outcomes by prioritising teacher professional development, the provision of instructional resources, and the integration of technology into classroom practice. The initiative emphasised comprehensive in-service teacher training, equipping educators with enhanced pedagogical skills and deeper content knowledge, while also introducing digital platforms such as tablets to facilitate lesson planning and classroom data management. Additionally, PRIEDE oversaw the distribution of learner workbooks and teacher guides aligned to the national curriculum, with the intention of standardising instructional practices across diverse educational contexts. Although the project yielded notable improvements in teacher preparedness and classroom instruction,

persistent challenges remained—most notably in the consistent implementation of learner-centred teaching and in addressing substantive gaps in mathematical understanding among educators and learners. The experience of the PRIEDE project highlights the critical importance of sustained professional support, targeted coaching, and robust monitoring mechanisms to preserve gains and respond effectively to the evolving needs of Kenya's education sector.

The Tusome Early Grade Reading project in Kenya was a national initiative aimed at improving literacy outcomes among early primary learners. Supported by USAID and implemented in collaboration with the Ministry of Education, Tusome emphasised the adoption of structured daily lesson guides, comprehensive teacher training, and ongoing in-class coaching to uphold high pedagogical standards. The project integrated digital technologies, such as tablets, to enable real-time lesson observation and the delivery of individualised feedback by instructional supervisors. Evaluative studies consistently demonstrate that Tusome led to substantial improvements in reading proficiency, with students exhibiting enhanced capacity to decode and comprehend grade-level texts. The success of the programme is attributed to robust government ownership, alignment with national education policies, and the implementation of strong monitoring and accountability frameworks. Nevertheless, despite these achievements, the long-term sustainability of Tusome was impeded by insufficient systematic integration into national education structures and inconsistent resource allocation, which rendered it challenging to maintain all programme components following the withdrawal of external funding and support.

The Tayari project in Kenya was established to improve school readiness among learners in Early Childhood Development and Education (ECDE) by systematically integrating foundational numeracy, social and emotional learning (SEL), and health practices into daily classroom routines. A core feature of Tayari's implementation was the deliberate promotion of collaboration between teachers and parents, achieved through consistent engagement and the distribution of take-home numeracy activities intended to reinforce learning beyond the classroom. Impact assessments revealed that Tayari fostered positive attitudes among parents and facilitated smoother transitions for children into formal schooling, thereby strengthening the foundation for continued academic success. The sustainability of the initiative was supported by its

alignment with national education priorities and a strong emphasis on community involvement, which contributed to the ongoing adoption of school readiness practices in ECDE centres throughout Kenya. However, despite these strengths, the project encountered sustainability challenges due to the lack of systematic, long-term integration within national education structures and inconsistent resource allocation, which made it difficult to maintain all programme components once external support diminished.

The National Assessment System for Monitoring Learner Achievement (NASMLA) in Kenya has played a pivotal role in evaluating and documenting the development of foundational literacy and numeracy skills among primary school learners. At baseline, the NASMLA assessment identified considerable gaps in achievement, with a significant proportion of pupils demonstrating limited proficiency in performing grade-appropriate mathematical operations and exhibiting challenges in reading comprehension. These initial findings underscored the urgent need for targeted interventions to address systemic weaknesses in pedagogy, resource allocation, and school leadership.

Subsequent endline data from NASMLA revealed measurable improvements in learner outcomes, particularly in institutions that participated in large-scale interventions such as PRIEDE, Tusome, and Tayari. The observed progress was primarily attributed to factors including enhanced teacher professional development, the provision of structured and learner-centred instructional materials, and the effective integration of digital technologies into classroom practice. These initiatives contributed to a more supportive learning environment and facilitated data-driven decision-making at both the school and policy levels.

Despite these positive trends, the endline assessment also illuminated persistent challenges. Disparities in achievement remain evident across different regions and socioeconomic groups, pointing to ongoing inequities in access to quality education and home learning support. Additionally, inconsistencies in instructional quality and a lack of robust school leadership engagement have impeded uniform progress in numeracy and literacy. The report further highlights the necessity of continuous investment in teacher capacity building, the establishment of comprehensive monitoring and evaluation systems, and the active involvement of communities and stakeholders to reinforce and

sustain gains in learner achievement.

In summary, NASMLA findings demonstrate that systematic assessment, when coupled with evidence-based interventions and strong institutional support, can significantly enhance foundational learning outcomes. Continued efforts to strengthen these components are essential for achieving equitable and sustainable improvements in Kenya's education sector.

Additionally, evidence from Uwezo (2021) shows that a large proportion of Kenyan children in Grade 3 still cannot perform basic mathematical operations. This suggests persistent weaknesses in home learning support, inconsistent instructional quality, and limited school leadership engagement in numeracy improvement.

Moreover, the Presidential Working Party on Education Reforms (PWPER) (2023) noted that while the Competency-Based Education (CBE) includes numeracy and SEL integration goals, teacher capacity remains uneven, and many schools lack systematic coaching structures. Teacher Training Colleges (TTCs) are also still adjusting to the CBE, with mixed results in aligning pre-service training to foundational numeracy needs.

Successful foundational numeracy initiatives across global, regional, and national contexts share key features: strong alignment between policy, curriculum, and teacher training (as seen in Finland and Singapore); structured lesson plans and ongoing coaching (notably in Kenya's Tusome and Rwanda's L3); integration of social and emotional learning (SEL) to boost learner confidence and collaboration; and a shift in TTCs towards practical, participatory teacher preparation. These elements collectively support effective and sustainable early numeracy learning.

“Successful foundational numeracy initiatives across global, regional, and national contexts share key features: strong alignment between policy, curriculum, and teacher training ... structured lesson plans and ongoing coaching ... integration of social and emotional learning (SEL) ... and a shift in TTCs towards practical, participatory teacher preparation.”



2 METHODOLOGY

Component Two involved a review of past large-scale programmes, specifically PRIEDE, Tusome and Tayari, with the aim of establishing their scale, sustainability and impact. Qualitative design was adopted using document analysis and Key Informant Interview guides. Relevant documents, such as policies and evaluation reports, were reviewed, and an analysis summarised using a comparative¹ programme analysis matrix. A total of 22 key informant interviews comprising programme leads at the national level, main consultants, Ministry of Education senior officers, KICD officers, Math teachers, Curriculum Support Officers, Development Partners, and Numeracy experts were targeted. A total of 16 interviews, comprising nine females and seven males, were conducted, giving a response rate of 73 per cent.

¹ The selection of the PRIEDE, Tusome, and Tayari programmes for comparative analysis was guided by several criteria, including their national scale, policy relevance, diversity in programmatic focus (encompassing literacy, numeracy, and holistic early childhood development), and the availability of comprehensive documentation and evaluative data. Key informants were included based on their direct involvement in the design, implementation, or oversight of these programmes, spanning a spectrum of expertise from policy formation and curriculum development to classroom-level practice. The comparative analysis matrix was systematically applied to assess each programme across standardised dimensions—such as design features, fidelity of implementation, outcomes, sustainability, and equity—thereby ensuring methodological consistency throughout the evaluation process.



3 FINDINGS: LARGE-SCALE FOUNDATION PROGRAMMES IN KENYA

3.1 Document Analysis

Document analysis focused on eleven components, namely: Programme Objectives, Design Elements, Implementation Approach, Teacher Component, Materials Used, Outcomes & Impact, Monitoring & Evaluation, Sustainability Measures, Equity & Inclusion, Costing, and Key Lessons for each of the three programmes (PRIEDE, Tusome and Tayari). Table 1 gives a summary of the key elements of the focus projects (Appendix I).

3.1.1 Programme Objectives

- 1. PRIEDE:** The goal of PRIEDE was to enhance literacy and numeracy outcomes in Grades 1–3, while also strengthening management systems at both the school and national levels. The programme was implemented in both public schools and low-cost private (non-formal) institutions. PRIEDE's main focus was numeracy, as it picked the numeracy component of the PRIMR pilot. PRIEDE was aligned to CBE as it used the Direct Instruction Method (DIM).
- 2. TUSOME:** The primary objective of the TUSOME programme was to enhance literacy skills in English and Kiswahili among early-grade learners (Grades 1–3) in public primary schools. The programme sought to achieve this by aligning key elements of the Kenyan education system—such as curriculum, teaching methodologies, and learning resources. The objectives of TUSOME were clear, as the expected student learning

benchmarks were clearly stated. Tusome was fully aligned with the Competency-Based Education (CBE) and was eventually integrated into the national CBE framework, ensuring a smooth transition for both teachers and learners.

- 3. TAYARI:** The programme objective was to increase the number of pre-primary children transitioning to Grade 1 with the necessary school readiness skills, which included literacy, numeracy, executive functioning, and social-emotional development.

The specific objectives of the Tayari programme were to: Develop a tested, cost-effective, affordable, and scalable ECD model, pilot and expand the delivery of quality ECD services using this tested model, and promote the global adoption of the model by offering open-source ECD materials and sharing key lessons and activities at the international level. The Tayari programme adopted the Numeracy Instruction Approach using three key principles: active student participation, teacher training, and spiral curriculum sequencing (Piper et al., 2021). The Tayari programme aligned with CBE's goal of developing well-rounded individuals with practical skills.

3.1.2 Design Elements

PRIEDE: The programme comprised several interconnected components aimed at enhancing early-grade numeracy. Both teachers and learners benefited from the provision of high-quality, low-cost instructional materials. For teachers, there were detailed, structured teacher guides aligned directly with each page of the pupil

workbooks. These guides outlined step-by-step lesson delivery, suggested the use of appropriate mathematics vocabulary and recommended learning resources for each lesson. For learners, pupil workbooks included a variety of daily activities and exercises which students were expected to complete, reinforcing classroom instruction and facilitating independent practice.

The structured pedagogy approach in PRIEDE involved the use of the Direct Instruction Method (DIM), which provided teachers with explicit, sequenced instructions for delivering content. Each lesson was broken down into manageable steps, ensuring consistency across classrooms and supporting teachers in pacing and content delivery. The teacher guides mapped out each lesson in detail, including suggested questions, activities, and formative assessment checkpoints.

Teacher training was an essential element of PRIEDE. Teachers participated in an intensive training programme that typically spanned five days. During these sessions, teachers were introduced to the structured pedagogy, effective use of instructional materials, classroom management strategies, and formative assessment techniques. Following the initial training, teachers received ongoing support through regular coaching and mentorship from County Curriculum Support Officers (CSOs).

Monitoring and evaluation were integral to PRIEDE's implementation. The evaluation design employed a combination of classroom observations and data collection using digital tools. CSOs visited classrooms to observe teaching practices, provide coaching, and offer feedback. These visits were tracked using tablets, which recorded the frequency of visits and detailed the feedback provided. Additionally, weekly assessments embedded in the pupil workbooks allowed continuous tracking of student progress, enabling timely instructional adjustments. The monitoring system leveraged existing school personnel and was supported by government funding, ensuring sustainability and integration with national education systems.

PRIEDE (Design-to-Impact Logic): The structured pedagogy approach, centred on the Direct Instruction Method (DIM) and detailed teacher guides, provided teachers with consistent, explicit steps for lesson delivery. This uniformity improved instructional quality and ensured all learners received comparable content, regardless of classroom or school. The regular coaching and mentorship, alongside embedded

formative assessments, supported teachers' ongoing professional growth and enabled timely identification of learning gaps. These design features led to measurable improvements in early-grade numeracy outcomes and strengthened management systems, as teachers became more effective and student progress could be tracked and addressed systematically.

TUSOME: The Tusome project in Kenya was implemented to strengthen early-grade literacy in English and Kiswahili for learners in Grades 1–3 within public primary schools. Central to the programme was the provision of meticulously designed instructional materials. Teachers received comprehensive, lesson-mapped guides, while learners were equipped with workbooks containing daily exercises that reinforced classroom learning and supported independent practice. The instructional design followed the "I do, we do, you do" approach, where teachers modelled literacy skills, facilitated guided practice, and subsequently enabled students to demonstrate independent mastery. This approach ensured structured and sequenced delivery of content, promoting consistency and measurable progression across classrooms.

Teacher preparation was prioritised through an intensive, five-day initial training, which equipped educators with the necessary skills to implement the structured pedagogy, effectively utilise instructional materials, manage classrooms, and conduct formative assessments. Ongoing professional support was provided via regular coaching and mentorship. The integration of ICT, including the use of tablets, played a significant role in supporting teacher training, monitoring instructional practices, and enabling continuous assessment for both teachers and learners.

Rigorous monitoring and evaluation mechanisms were embedded within the Tusome implementation strategy. Curriculum Support Officers (CSOs) conducted systematic classroom observations, capturing visit data and feedback digitally. Additionally, the inclusion of embedded assessments in student workbooks facilitated ongoing tracking of learner progress and informed instructional adjustments. These strategies, supported by existing school personnel and government funding, ensured the sustainability and integration of the programme within Kenya's national education system.

TUSOME (Design-to-Impact Logic): Tusome's "I do, we do, you do" instructional model and lesson-mapped materials fostered active engagement and gradual release of responsibility to students, building their confidence and skill mastery. The integration of ICT tools for teacher monitoring and assessment created a data-driven environment, enabling targeted support and continuous improvement. These design elements underpinned the programme's ability to achieve significant gains in early literacy, as teachers were better equipped and supported to deliver high-quality instruction and adapt to learners' needs in real time.

TAYARI: The Tayari project in Kenya was established as a comprehensive initiative to strengthen early childhood development (ECD) and enhance school readiness among pre-primary learners, with a particular focus on literacy, numeracy, executive functioning, and social-emotional skills. The instructional design of Tayari was rooted in a multifaceted, child-centred pedagogy aligned with the national curriculum. The approach emphasised three core principles: active student participation, high-quality teacher training, and spiral curriculum sequencing, ensuring that learning was both engaging and developmentally appropriate.

Instructional materials constituted a key pillar of the project. Teachers were provided with detailed guides and lesson plans, while learners received structured workbooks and supplementary materials designed to foster foundational competencies. These materials were curated to be both cost-effective and scalable, supporting the programme's ambition for broad adoption across diverse ECD settings.

Teacher professional development formed a central component of the Tayari model. Initial training sessions, typically spanning five days, were conducted to equip educators with the requisite skills to implement the Tayari pedagogy effectively. This training covered active learning strategies, classroom management, formative assessment techniques, and the optimal use of instructional materials. To reinforce and sustain quality teaching practices, ongoing coaching and mentorship were provided by Sub-County Early Childhood Development Coordinators (SCECDCs), who themselves were supported by the Tayari technical team in partnership with national and county education stakeholders, including the Ministry of Education and the Kenya Institute of Curriculum Development (KICD).

Evaluation and monitoring were deeply embedded within the Tayari approach to ensure accountability and continuous improvement. The project employed a robust system combining regular classroom observations, digital data collection via tablets, and continuous assessment mechanisms integrated into student workbooks. These evaluation tools facilitated ongoing tracking of both teacher performance and learner progress, enabling data-driven instructional adjustments and targeted support. Importantly, the monitoring framework leveraged existing school personnel and was aligned with government funding streams, ensuring sustainability and seamless integration with Kenya's national education systems.

Overall, Tayari demonstrated an evidence-based, systemic approach to ECD reform, underpinned by rigorous instructional design, targeted teacher development, quality learning resources, and comprehensive evaluation strategies. Its collaborative model with government agencies and focus on open-source materials positioned it as a scalable solution for advancing school readiness and foundational skills among Kenya's youngest learners.

TAYARI (Design-to-Impact Logic): Tayari's child-centred, participatory pedagogy and spiral curriculum sequencing allowed for instruction that matched children's developmental stages, fostering engagement and retention. High-quality teacher training and scalable, cost-effective materials ensured that teachers could implement best practices broadly and consistently. This design logic directly contributed to improved school readiness by supporting not only literacy and numeracy skills but also executive functioning and social-emotional development, equipping learners with a holistic foundation for future learning.

3.1.3 Implementation Approach

PRIEDE: The Kenya Primary Education Development (PRIEDE) project was a comprehensive, nationwide scale-up of the numeracy component of the Primary Mathematics and Reading (PRIMR) initiative, implemented in partnership with the Ministry of Education, Science and Technology (MoEST). Implemented between 2015 and 2019, PRIEDE was funded by the Global Partnership for Education and overseen by the World Bank. The project utilised a cascade model of implementation, which involved a multi-tiered structure of stakeholders at the national, county, and school levels to

ensure effective dissemination and uptake of programme activities across the country.

At the national level, the primary stakeholders included the Ministry of Education (MoE), Teachers Service Commission (TSC), and Kenya Institute of Curriculum Development (KICD). The MoE provided policy direction, overall coordination, and integration of PRIEDE into the national education agenda. The TSC was responsible for teacher management, including deployment, professional development, and monitoring of teachers participating in the programme. The KICD played a key role in developing and vetting instructional materials, ensuring alignment with the national curriculum, and providing technical expertise on content and pedagogy.

At the county level, County Directors of Education (CDEs), Sub-County Directors of Education (SCDEs), Curriculum Support Officers (CSOs), and TSC officers were integral to the cascade model. CDEs and SCDEs oversaw the implementation of PRIEDE activities within their jurisdictions, coordinated training sessions, and monitored progress. CSOs served as the frontline support for schools, conducting classroom observations, providing coaching and feedback to teachers, and collecting data for monitoring and evaluation. TSC officers at the county level ensured that teacher professional development and deployment were aligned with PRIEDE objectives.

At the school level, the core participants were pupils in Grades 1 and 2, teachers, head teachers, senior teachers, and Boards of Management (BOMs). Teachers implemented the new methodologies for early-grade mathematics and reading instruction, as introduced by PRIEDE. Head teachers and senior teachers provided leadership, coordinated school-based activities, and facilitated peer learning among staff. BOMs (Boards of Management) supported the administration and ensured the effective use of resources provided by the project. Pupils were the primary beneficiaries, engaging with improved teaching practices and learning materials to enhance their foundational skills.

The cascade model functioned by training and empowering national-level stakeholders, who then transferred knowledge and skills to county-level officers. These officers, in turn, provided direct support, training, and supervision to school-level actors. This hierarchical approach ensured that information, capacity-building, and resources flowed efficiently from the top down while data and feedback on implementation

and outcomes were reported from the school level upwards, enabling responsive support and continuous improvement throughout the PRIEDE programme.

TUSOME: The implementation of the Tusome project in Kenya was carefully structured to ensure effective delivery, sustainability, and nationwide impact. The process began with strong leadership from the Ministry of Education (MoE), which provided policy direction and ensured that Tusome's goals were fully aligned with the National Education Sector Strategic Plan (NESSP). RTI International played a pivotal technical role, developing instructional materials, designing comprehensive teacher training modules, and establishing robust systems for monitoring and evaluation. USAID and other international donors contributed vital funding and shared global best practices, further strengthening the project's technical and operational foundation.

Tusome's rollout relied on a cascade implementation model, which facilitated consistent and efficient transfer of knowledge and resources across all levels of Kenya's education system. At the national level, MoE officials and RTI technical experts received in-depth training on the new literacy pedagogy, curriculum content, and monitoring protocols. These national trainers then cascaded their expertise to county-level Curriculum Support Officers (CSOs) through ongoing professional development sessions.

At the county and sub-county levels, CSOs became the core implementers, regularly visiting schools to provide direct coaching and mentorship to teachers in Grades 1–3. They utilised tablets equipped with monitoring tools and data collection applications, enabling them to observe classroom instruction, track teacher and pupil progress, and deliver actionable, data-driven feedback. This hands-on support ensured that teachers consistently applied the new literacy strategies and adapted their instruction based on formative assessment results.

Within schools, implementation was further reinforced through collaborative leadership involving head teachers, senior teachers, and classroom teachers. Teachers participated in a five-day intensive training focused on foundational literacy, lesson planning, and effective use of instructional materials. The training was supplemented by ongoing, school-based coaching and continuous professional development, supported by user-friendly teacher guides aligned with student textbooks. Tusome

also ensured a centralised procurement process to maintain a 1:1 textbook-to-student ratio and provided a range of core and supplementary reading materials to facilitate differentiated and independent learning.

Crucially, Tusome's implementation was characterised by strong partnerships at every level, engaging local educational authorities, community stakeholders, and international organisations to create a supportive environment for literacy improvement. The project's phased transition strategy gradually shifted responsibility to the Kenyan government, institutionalising key components such as teacher training, coaching, resource provision, and monitoring within existing education systems.

TAYARI: The implementation of the Tayari project in Kenya was a collaborative and structured process, designed to strengthen early childhood development and education (ECDE) through a coordinated multi-level approach. The project, piloted between 2014 and 2019 in Nairobi, Uasin Gishu, Siaya, and Laikipia counties, engaged a broad spectrum of stakeholders at the national, county, and school levels, each with distinct yet interrelated roles to ensure effective delivery and sustainability.

At the national level, the Ministry of Education (MoE) provided strategic leadership and policy direction, overseeing the integration of Tayari objectives into Kenya's wider educational priorities. The Kenya Institute of Curriculum Development (KICD) played a central role in developing and vetting instructional materials and teacher guides, ensuring alignment with the national ECDE curriculum. RTI International offered technical support, contributing expertise in the development of training materials, coaching systems, and assessment tools, while also supporting monitoring and evaluation systems. The Ministry of Health was also a key national-level partner, particularly in the integration of health and nutrition components within the ECDE framework.

At the county level, technical ECDE officers selected by the MoE from the participating counties were instrumental in operationalising the project. These officers coordinated Tayari activities locally, facilitated the adaptation of programme materials to county-specific contexts, and organised teacher professional development initiatives. County teams, in collaboration with KICD and RTI, supported the contextualisation of learning resources and coached teachers

on best practices for early learning and health integration. The involvement of county-level Ministry of Health teams further ensured that health and nutrition messages and interventions were woven into ECDE centre activities.

At the school and community level, the main players included ECDE centre head teachers, classroom teachers, and Boards of Management (BOMs). Teachers implemented the Tayari methodologies, utilising well-structured instructional materials and direct assessment tools to support classroom learning. Head teachers and BOMs provided leadership, managed resources, and fostered a supportive environment for both staff and learners. In Nairobi, the project included both public and Alternative Provision of Basic Education and Training (APBET) ECDE centres, while in the other three counties, the focus was on public centres. Low-cost private school providers were also engaged, especially in Nairobi, expanding the programme's reach to diverse educational settings.

The cascade model was central to Tayari's implementation, ensuring the systematic transfer of knowledge and skills across all levels. National-level experts and technical partners first developed and piloted training modules, instructional materials, and assessment tools. These resources were then disseminated to county-level ECDE officers, who received intensive capacity-building and subsequently trained school-level personnel through face-to-face sessions and ongoing classroom-based coaching. This approach facilitated consistent messaging and practice, while also enabling adaptation to local needs. Feedback loops were established, with data collected from schools informing county and national teams, thereby supporting evidence-based adjustments and continuous improvement.

Overall, the Tayari project's multi-level structure and cascade implementation model fostered ownership at every stage, built local capacity, and promoted the sustainability of quality early learning interventions. By engaging stakeholders from policy to practice, and by integrating education with health and nutrition, Tayari established a robust framework for scaling up ECDE reforms in Kenya.

3.1.4 Teacher Component

PRIEDE: It involved a training component where teachers were trained on new methodologies of early-grade mathematics instruction, i.e., how to teach using EGM innovative methodologies and assess pupils based on EGM innovative practices. The project also encouraged collaborative teaching and learning, with two teachers often handling a lesson together. The CSOs conducted lesson assessments using tablets. It incorporated Continuous Professional Development (CPD) for teachers to improve the quality of education. CPD in PRIEDE focused on enhancing teachers' skills and knowledge to effectively implement the curriculum and improve student learning outcomes. This structured training approach ensured that teachers were consistently supported and equipped to deliver high-quality mathematics instruction throughout the year. There were teacher guides, textbooks, learner workbooks and homework books as well as tablets for assessment and feedback. These resources were designed to be culturally relevant and aimed for a one-to-one learner-to-book ratio for textbooks. The materials supported foundational numeracy for Grades 1–3 and were intended to align with the national curriculum and benchmarks, fostering improved mathematical proficiency among early-grade learners.

TUSOME: The government, through the MoE, worked with RTI to engage local CSOs and instructional coaches to provide teachers with continuous professional development and coaching in their own schools and communities. Teachers received ongoing professional development at regular intervals throughout the academic year, including initial intensive training sessions and frequent, school-based coaching visits—often occurring at least once or twice per month. These sessions focused on foundational literacy skills, effective lesson planning, differentiated instruction, and the use of both core and supplementary instructional materials. The coaching emphasised practical strategies for classroom management, student engagement, and the integration of inclusive approaches for learners with diverse needs. Each teacher received continuous professional development (TPD) and ongoing coaching support, with coaching serving as a key pillar in strengthening classroom instruction. Teachers were also provided with well-designed, easy-to-use teacher guides that included lesson plans aligned with student textbooks to ensure consistency in teaching.

To support data-driven instruction, teachers were equipped with tablets and trained to use them for tracking student performance, providing timely feedback, and receiving instructional support. Data collected from classroom observations and student assessments were regularly reviewed by teachers and coaches to identify learning gaps, inform instructional adjustments, and tailor support for both teachers and students. This systematic use of data enabled targeted interventions, fostered accountability, and promoted continuous improvement in teaching practices and student learning outcomes.

TAYARI: In the Tayari programme, ECDE officers were systematically trained to provide ongoing support to teachers through a combination of face-to-face professional development sessions and regular classroom-based coaching. Professional development for teachers occurred at scheduled intervals throughout the academic year, with county-level education officers organising initial intensive training workshops followed by frequent on-site coaching visits – typically at least once or twice per month. These sessions focused on the effective use of instructional materials, pedagogy, and integration of health and nutrition components within the classroom.

Teachers were equipped with well-structured instructional materials and received targeted training on how to utilise these resources to optimise classroom learning. Tayari also incorporated direct assessment tools, including instruments derived from the Monitoring Early Learning and Quality Outcomes (MELQO) framework and pupil background questionnaires, to measure both learning progress and contextual factors. Data collected from these assessments were systematically analysed by teachers, ECDE officers, and programme staff to identify learning gaps, monitor teaching effectiveness, and guide instructional adjustments. This data-driven approach ensured that professional development remained responsive to the evolving needs of both teachers and learners.

Additionally, the programme leveraged tablet-based technology to enhance supervision, mentoring, and real-time feedback. The integration of health and nutrition support was closely monitored, with relevant data informing the design and delivery of interventions to foster holistic child development. As a result, Tayari established an adaptive professional development model characterised by frequent training, continuous coaching, and evidence-based decision-making, thereby contributing

to sustained improvements in early childhood education outcomes.

3.1.5 Materials Used

PRIEDE: A variety of materials were used in the implementation of PRIEDE. These materials include textbooks, teachers' guides, learner workbooks and other culturally relevant instructional resources. The project aimed for a one-to-one learner-to-book ratio for textbooks.

TUSOME: The Tusome Early Grade Reading Programme utilised a variety of materials to improve literacy in Grades 1–3. These include student textbooks and teacher guides in both English and Kiswahili, adapted versions for students with visual or hearing impairments, and digital resources such as tablets loaded with instructional materials and assessment tools. The materials and lesson guides were easy to use and significantly reduced preparation time. This combination of ease and effectiveness contributed to strong teacher support and high levels of programme adoption.

TAYARI: The Tayari Early Grade programme adopted the use of various materials to support teachers and students in early childhood development and education (ECDE). These materials included teacher guides, learner workbooks, Big Books, charts, and assessment tools, often delivered through tablet-based technology for easy access and efficient use by coaches and staff. The programme also emphasised the development of classroom resources aligned with the Kenyan ECDE curriculum, including those for language, mathematics, environmental awareness, psychomotor skills, and creative and religious education.

The Tayari learner books and teacher guides were developed collaboratively by the Ministry of Education (MoE), the Kenya Institute of Curriculum Development (KICD), and the Tayari technical team. These materials followed a structured scope and sequence aligned with the KICD syllabus. The teacher guides were carefully matched to the learner books, providing teachers with clear, practical support for delivering high-quality instruction.

3.1.6 Outcomes and Impact

PRIEDE: The PRIEDE early years numeracy programme made notable strides in improving foundational numeracy among early-grade

learners in Grades 1–3, as evidenced by the increased percentage of students achieving recommended proficiency levels in mathematics against national benchmarks. The endline data showed a 7.3 per cent improvement for boys and a 3.4 per cent improvement for girls in mathematics achievement levels, indicating progress but also highlighting a gender gap in outcomes. The project reached a vast scale, impacting over 10 million learners and training more than 100,000 teachers across Kenya's 23,000 primary schools, suggesting broad system-level influence on instructional capacity and pedagogical skills in mathematics.

However, while these outcomes are promising, a closer critique reveals that the improvements were not uniformly distributed across all domains of numeracy or among all student groups. The percentage point gains, though statistically significant, suggest incremental progress rather than transformative change, especially for girls who lagged behind boys in achievement gains. There is limited evidence in the available data that PRIEDE's interventions led to substantial improvements in more complex mathematical domains, such as problem solving, reasoning, or application of concepts beyond basic arithmetic. Most reported gains were in foundational numeracy skills, which, while crucial, do not fully encompass the broader spectrum of mathematical understanding required for future academic success.

Furthermore, the programme's impact on teacher capacity, although positive, may have varied depending on context, prior teacher experience, and available resources. The large-scale nature of the project likely introduced challenges in maintaining consistent quality of training and support across diverse school environments. Issues such as resource allocation, ongoing mentorship, and adaptation to local needs may have influenced the depth and sustainability of the improvements observed. Accountability mechanisms were strengthened, but the reliance on quantitative indicators may have overlooked qualitative aspects of learning, such as student engagement and classroom dynamics.

While PRIEDE achieved noteworthy advancements in foundational numeracy and teacher training, the improvements were not universally rosy or comprehensive across all domains. The most substantial gains were seen in basic mathematical skills, with less evidence of impact on higher-order domains or on narrowing gender disparities. Future iterations of the

project could benefit from targeted interventions to address these gaps, further disaggregated data analysis, and enhanced support structures to ensure equitable and holistic improvements in mathematics learning.

TUSOME: As a national programme, Tusome reached 7.6 million learners across all 47 counties in Kenya, covering 23,000 public schools and 1,500 Alternative Provision of Basic Education and Training (APBET) institutions. Through the Tusome programme, 26 million textbooks and supplementary materials were distributed. Notably, Kiswahili non-readers reduced from 43 per cent to 19 per cent. There was a significant reduction in non-readers (zero readers) between the baseline (2015) and endline (2019), coupled with notable increases in both fluent and emergent readers across both Grade 1 and Grade 2. Most importantly, teachers observed notable improvements in student learning outcomes compared to previous methods.

While the Tusome programme demonstrated impressive reach and substantial improvements in foundational literacy, a closer examination reveals that the progress was not uniformly distributed across all domains or learner groups. The most pronounced gains were observed in basic reading skills, particularly the reduction in non-readers and the increase in fluent and emergent readers. These outcomes reflect strong advancements in early-grade literacy, yet there is limited evidence to suggest equally robust improvements in more complex domains such as reading comprehension, critical thinking, or the ability to apply literacy skills to broader academic contexts. The programme's focus on foundational skills, while crucial, may have overshadowed opportunities to strengthen higher-order reading competencies, which are essential for long-term academic success.

In terms of equity, the available data does not provide a comprehensive breakdown of outcomes by gender, making it difficult to assess whether the programme effectively addressed gender disparities in literacy achievement. Without disaggregated results, it remains unclear if girls and boys benefited equally or if gaps persisted in specific areas of reading proficiency. This lack of gender-specific data represents a limitation in evaluating the overall impact of Tusome, particularly in light of broader concerns about equity in educational interventions.

Additionally, while teacher-reported improvements in student learning outcomes are encouraging, the large-scale implementation

across diverse school environments likely introduced variability in the quality and sustainability of these gains. Factors such as prior teacher experience, resource availability, and local contextual challenges may have influenced the depth and consistency of improvements observed. Although the programme's use of digital resources and lesson guides contributed to teacher support and programme adoption, ongoing mentorship and adaptation to local needs would be critical to ensure lasting impact.

In summary, the Tusome programme achieved significant progress in foundational literacy, with marked reductions in non-readers and improvements in early reading skills. However, the advances were not universally comprehensive across all literacy domains, and the absence of detailed gender-disaggregated data limits the assessment of equity in outcomes. Future programme iterations could benefit from targeted interventions to address higher-order literacy skills, more rigorous analysis of gender disparities, and strengthened support structures to promote sustained and equitable improvements in student learning.

TAYARI: The Tayari programme demonstrated positive impacts on early childhood development by improving learning outcomes across cognitive, physical, social, and emotional domains, and facilitating smoother transitions to primary school. Teacher training, ongoing support, and the integration of health components into early childhood development centres (ECDEs) were central to strengthening the pre-primary system. Notably, over two academic years, Tayari significantly enhanced the numeracy skills of children in supported ECDE centres, with gains measured at 0.31 standard deviation (SD)—a result that was both statistically significant and educationally meaningful. These improvements were evident in foundational numeracy tasks such as producing sets, identifying numbers, and naming shapes, according to the longitudinal randomised controlled trial (RCT) and external evaluation by the African Population and Health Research Center (APHRC, 2018).

However, while the Tayari project achieved notable results in foundational numeracy, a closer critique reveals that the improvements were not universally comprehensive across all domains of early learning. The most substantial gains were reported in basic numeracy skills, which are critical for early academic success; yet, there is limited evidence to suggest that similar progress was made in higher-order mathematical

thinking, literacy, or broader cognitive domains. The programme's impact on physical, social, and emotional development—though part of the stated focus—was less rigorously measured or reported, making it difficult to assess the full extent of its influence beyond numeracy.

The improvement in numeracy was primarily observed among children who received both training and support, as well as books and teachers' guides, as identified by the external evaluation. This suggests that the full package of interventions was necessary for optimal results, and that less comprehensive approaches might yield diminished outcomes. While the overall gains in numeracy were significant for the treatment groups, it remains unclear whether all learners benefited equally. The available data does not provide a detailed breakdown of results by gender, making it difficult to determine if boys and girls experienced similar improvements or if gender disparities persisted in learning outcomes. Without gender-disaggregated analysis, the programme's effectiveness in addressing equity concerns cannot be fully evaluated.

Additionally, the implementation of Tayari across diverse ECDE settings likely introduced variability in the quality and sustainability of improvements. Factors such as prior teacher experience, resource availability, and local contextual challenges may have influenced the depth and consistency of the observed gains. The integration of health interventions was a unique aspect of the programme, but the extent to which these contributed to learning outcomes, as opposed to educational interventions alone, was not clearly isolated in the evaluation.

In summary, while the Tayari programme made significant strides in improving foundational numeracy and strengthening pre-primary education, the improvements were largely concentrated in basic skills and among children who received the most comprehensive support. The absence of detailed data on other learning domains and gender disparities represents a limitation in fully assessing the programme's overall impact and equity. Future iterations of the Tayari model could benefit from a broader focus on holistic development, more rigorous monitoring of diverse learning outcomes, and the collection and analysis of gender-disaggregated data to ensure that all learners are equitably supported.

3.1.7 Monitoring and Evaluation

PRIEDE: Monitoring and evaluation (M&E) for the PRIEDE project in Kenya was systematically embedded within the National Integrated Monitoring and Evaluation System (NIMES), ensuring alignment with the National Performance Management Framework (NPMF). This strategic integration enabled the tracking of PRIEDE's activities and outcomes within the context of national development priorities and facilitated a comprehensive approach to the assessment of government interventions.

The monitoring process was characterised by the systematic and continuous collection of data related to project implementation. This entailed tracking various outputs, such as the distribution of educational materials, delivery of teacher training sessions, infrastructure improvements, and activities related to capacity building. Data were collected at multiple administrative levels—including school, county, and national—thereby providing a holistic overview of the project's reach and effectiveness. The evaluation framework was designed to capture outcomes pertaining to student learning achievements, teacher performance, and the overall enhancement of educational quality.

A variety of tools and methodologies were utilised to ensure robust M&E processes. Digital data collection platforms facilitated real-time reporting by schools and education officers, supporting the timely aggregation and analysis of information. Standardised forms, comprehensive surveys, and classroom observation checklists were implemented to collect both quantitative and qualitative data. Furthermore, regular field visits and spot checks by education officers were conducted to validate reported data and assess the fidelity of project implementation on the ground. Data dashboards and visualisation tools were employed to synthesise and present findings in a manner accessible to policymakers and stakeholders, enabling effective progress tracking and evidence-based decision-making.

The findings derived from the M&E activities revealed several critical achievements as well as areas requiring further attention. The project significantly enhanced data-driven decision-making capacity within the education sector, resulting in improved reporting and accountability across all levels. Strengthened teacher training programmes and increased availability of resources contributed to improved classroom practices and learning environments.

Nevertheless, the evaluation identified some variability in the quality of implementation across different regions, which was often attributable to disparities in resource availability, local capacity, and contextual challenges. The establishment of continuous feedback loops within the M&E system was instrumental in highlighting these gaps and informing subsequent adaptations to the project's design and delivery.

In conclusion, the monitoring and evaluation approach adopted for the PRIEDE project provided a structured, evidence-based mechanism for tracking progress, identifying successes, and addressing challenges. The use of digital tools, standardised instruments, and multi-tiered reporting ensured that the data generated was both comprehensive and actionable, thereby supporting the overarching objective of improving educational outcomes throughout Kenya.

TUSOME: The Tusome programme implemented a robust and multi-layered monitoring and evaluation (M&E) system to ensure fidelity in programme delivery and to measure learning outcomes effectively. This framework encompassed comprehensive data collection, capacity building, and iterative feedback mechanisms, underpinning continuous improvement in reading instruction across schools.

Curriculum Support Officers (CSOs) played a central role in this process. Equipped with tablets and specialised training, CSOs carried out regular classroom visits and administered systematic student assessments. The use of technology, such as data dashboards and GPS verification, enabled accurate tracking of field activities and real-time reporting. This digital infrastructure provided accessible and up-to-date information to various stakeholders, including school leaders, education officers, and policymakers, thereby facilitating informed decision-making and responsive management of resources.

Instructional coaches, supported by organisations such as WERK, utilised the collected data to tailor teacher support, especially in informal and alternative provision schools. Student assessment results and classroom observation records were analysed to identify instructional challenges, allowing for targeted professional development and support that directly addressed teachers' needs.

Evaluation findings highlighted several key achievements. Notably, there was a marked

improvement in student literacy outcomes, with teachers reporting significant gains compared to previous instructional approaches. The integration of technology and data-driven coaching practices enhanced teacher accountability and system management, fostering an environment of transparency and high standards.

Despite the notable achievements of the monitoring and evaluation (M&E) framework, several critical gaps were identified that merit further attention. Implementation effectiveness showed considerable variability across different regions, mainly due to disparities in resource availability, local capacity, and contextual challenges. As a result, some counties reported stronger outcomes, while others lagged behind, indicating a pressing need for more targeted interventions to address these differences.

Although the adoption of technology enhanced data collection processes, inconsistencies in data quality and reporting integrity were observed in certain areas. These issues underscore the importance of ongoing training and continuous refinement of the system to ensure reliable and actionable data. Furthermore, there were noticeable disparities in the provision of instructional support and learning materials, particularly in remote and informal schools. Such inequities affected the overall distribution of programme benefits, highlighting the necessity for focused resource allocation to underserved communities.

Continuous professional development was offered to educators and support officers; however, capacity gaps persisted among some groups. These limitations hindered the full realisation of the programme's intended outcomes in specific contexts and illustrate the need for ongoing capacity building to ensure more uniform programme effectiveness across all regions.

The structured monitoring and evaluation approach adopted by the Tusome programme was instrumental in tracking progress, identifying areas of strength, and highlighting gaps requiring strategic attention. Ongoing refinements to the M&E processes, with emphasis on equity, data reliability, and capacity development, will be essential to ensure sustained and inclusive improvements in early learning outcomes across Kenya's education system.

TAYARI: The Tayari project established a comprehensive monitoring and evaluation framework to assess the effectiveness and

efficiency of its early childhood interventions in Kenya. This framework aimed primarily to measure the programme's impact on school readiness among pre-primary learners and to determine its cost-effectiveness. To accomplish this, a longitudinal data collection approach was adopted, beginning with baseline assessments at the start of the Pre-Primary 1 year and followed by midterm assessments at the year's close. This method allowed the team to track individual learners' progress over time and provided clear evidence of both immediate and longer-term outcomes.

To ensure methodological rigour and impartiality, the African Population and Health Research Center (APHRC) served as the external evaluator. The evaluation employed a randomised control trial design, grouping schools and learners into distinct categories: Training & Support; Training & Support plus Books/Teachers' Guides; Training & Support plus Books/Teachers' Guides plus a Health intervention; and a control group maintaining standard practice. By following the same cohort of children throughout their pre-primary education, the project generated robust longitudinal data on learning outcomes, school readiness, and the incremental effects of various interventions.

Although the M&E framework was strong, several challenges emerged during implementation. Deviations in the quality and completeness of data were noted, mostly due to differences in local capacity for data collection and reporting. Schools in remote and under-resourced areas struggled with consistent administration of assessments and timely data entry, affecting the reliability and comparability of the results. The randomised control trial methodology, while providing strong causal evidence, also required significant logistical coordination and resources, occasionally straining the capacity of local monitoring teams and impacting the consistency of data collection. Additionally, certain domains of child development, such as social-emotional skills, proved more difficult to measure reliably with the existing tools, highlighting the need for refined instruments and further training for assessors. Communication and feedback mechanisms between data collectors, programme implementers, and policymakers were not always fully optimised, sometimes causing delays in applying M&E findings to inform programme improvements in real time.

In light of these challenges, several recommendations were proposed to strengthen

future monitoring and evaluation systems. These included enhancing local capacity building efforts to improve data quality and reporting consistency, upgrading data management systems for more timely collection and analysis, refining and expanding assessment tools—especially for social-emotional domains—and providing targeted training for assessors. Improving the integration of feedback loops among all stakeholders was also emphasised to ensure that M&E data could more effectively guide timely programmatic adjustments. Ongoing investment in these areas is considered essential for monitoring and evaluation practices in early childhood development programmes like Tayari to continue driving programme improvement, policy relevance, and equitable learning outcomes in early years across Kenya.

3.1.8 Sustainability

PRIEDE: The sustainability of the PRIEDE project was anchored in a deliberate strategy to embed its core components within Kenya's national education system, ensuring that its benefits would persist beyond the conclusion of initial external funding. This was achieved through the integration of project activities into national policies, capacity building for stakeholders, and close alignment with frameworks such as Competency-Based Education (CBE). The project's participatory approach was critical, as it ensured that feedback from stakeholders informed both the design and implementation, promoting a sense of ownership and relevance at every level.

A central pillar of the sustainability framework was government commitment. The Ministry of Education played an instrumental role by incorporating PRIEDE's best practices into official policies and annual planning. Over time, the government gradually increased its financial support, thereby reducing reliance on international donors. International partners initially provided financial and technical backing, but a key objective was the transfer of capacity to national and county-level actors, thereby equipping local systems to maintain and scale interventions. Community involvement was also prioritised, particularly within early childhood education, where parents, local leaders, and school management committees contributed to resource mobilisation, planning, and ongoing monitoring of learning outcomes.

PRIEDE was successful in sustaining several elements of its intervention. Policy guidelines developed under the project were

institutionalised and became part of standard educational practice, ensuring continuity of approaches such as participatory stakeholder engagement and the Universal Design for Learning. Professional development initiatives for teachers and education officers extended beyond the project's initial phase, supported by both government and community stakeholders. Support for under-resourced schools continued, helping to narrow regional gaps in learning outcomes, while mechanisms for community and parental involvement, such as school-based management committees, remained active and fostered local accountability.

There is evidence that PRIEDE-developed materials and practices continue to be used, and that these have been integrated into government monitoring and reporting systems in supported counties.

Despite these successes, some challenges limited the full realisation of sustainability. Disparities in capacity and resources led to uneven outcomes across regions; certain counties found it difficult to maintain programme activities after external support ended. In some cases, high staff turnover and limited opportunities for ongoing professional development impeded the retention of new skills and practices introduced by the project. While community engagement was robust in some areas, sustaining high levels of participation proved more difficult in regions without strong traditions of school governance.

The PRIEDE project's experience highlights the importance of multi-level integration—across policy, practice, and community—for lasting sustainability. While the institutionalisation of policies and strong community engagement delivered significant progress, persistent challenges in capacity and resource equity underscore the need for continued investment, ongoing support, and the establishment of mechanisms to monitor and reinforce sustained impact over time. These lessons can inform the design of future education sector programmes seeking long-term sustainability and equitable outcomes.

TUSOME: The sustainability of the Tusome programme was anchored in a multifaceted framework that prioritised government leadership, systemic integration, and capacity building at every level of implementation. From its inception, Tusome was designed to transition from a donor-led innovation to a nationally owned and managed initiative. This was achieved through a deliberate strategy of embedding

programme components within established Ministry of Education structures, ensuring that the reforms would persist beyond the lifecycle of external funding. The Kenyan government's commitment was demonstrated by its increasing financial investment and its willingness to adapt national policies to accommodate the programme's methodologies. Over time, government resources were leveraged to fund the printing and distribution of learning materials, with three major rounds resulting in the provision of approximately six million textbooks across multiple grade levels. This investment enabled the achievement of a one-to-one student-to-book ratio in many subject areas, a significant milestone that addressed material shortages and supported equitable access to quality instruction.

A core element of Tusome's sustainability framework was the systematic integration of programme activities within the national education system. Rather than operating as a parallel structure, Tusome aligned its content, pedagogies, and monitoring mechanisms with those of the Ministry of Education, enabling seamless adoption by schools and education officers. The revision of instructional content and the adoption of evidence-based pedagogical approaches were accompanied by the universal provision of materials, ensuring that all learners, regardless of geographic location or socioeconomic status, benefited from the reforms. Teacher capacity building was another pillar of sustainability; large-scale professional development initiatives equipped educators with the skills and confidence needed to deliver the new curriculum and adapt to ongoing changes. Continuous support and mentorship, delivered through curriculum support officers and targeted in-service training, reinforced these gains and built a culture of reflective practice among teaching staff.

Stakeholder engagement was central to Tusome's sustained impact. The programme cultivated strong partnerships between government, donors, school leaders, and communities, fostering a sense of ownership and shared responsibility for outcomes. Dedicated funding streams, such as the Youth Fund and the Partnership Fund, were established to support reading initiatives and promote collaboration between public and private actors. These resources not only bolstered programme activities but also facilitated the emergence of community-based reading champions, who played a critical role in nurturing a local culture of reading and supporting learners outside the

classroom.

The use of data-driven approaches further contributed to Tusome's sustainability. The integration of information and communication technology (ICT) tools enabled real-time tracking of student performance, allowing for timely interventions and informed decision-making. This continuous feedback loop ensured that instructional strategies remained responsive to learner needs and that programme adjustments could be made efficiently. The simplification of lesson delivery and planning also streamlined teachers' workloads, contributing to strong teacher buy-in and ongoing support for the programme's objectives.

Despite these successes, the pursuit of sustainability in Tusome was not without challenges. Variability in local capacity occasionally affected the consistency of programme delivery, particularly in under-resourced regions where infrastructure constraints and staff turnover posed ongoing obstacles. Maintaining high levels of professional development and mentorship required sustained investment, and while the government's increasing financial commitment was notable, there remained a need for continued resource mobilisation to support scale-up and address emerging needs. Moreover, while the integration of ICT tools improved monitoring, disparities in technological capacity across counties sometimes limited the effectiveness of data-driven interventions.

Evidence of sustained elements in the Tusome programme is robust. The continued government-led distribution of learning materials, the institutionalisation of revised pedagogical practices, and the active engagement of teachers and communities all point to lasting impact. The establishment of dedicated funds and the role of community reading champions demonstrate a commitment to fostering a reading culture that extends beyond the classroom. The programme's alignment with national policy and its successful integration into government systems have enabled it to endure and adapt in the face of changing circumstances. While challenges remain, the Tusome experience underscores the importance of comprehensive planning, stakeholder ownership, and ongoing capacity building in achieving sustainable education reform.

TAYARI: Tayari adopted a comprehensive sustainability framework designed to ensure the programme's long-term viability and impact within Kenya's early childhood education sector.

Central to its approach was the development of a cost-effective and scalable model for early childhood development, which prioritised integration with existing government structures. By embedding its activities within established county-level pre-primary education frameworks, Tayari positioned itself to benefit from ongoing government oversight, resource allocation, and policy support, thereby enhancing its prospects for sustained implementation beyond the initial project period.

A key aspect of the sustainability strategy was the emphasis on strengthening the existing pre-primary education system. Tayari focused on capacity building for teachers, the provision of practical and accessible instructional materials, and the enhancement of classroom support mechanisms. Teacher training initiatives were tailored to address identified gaps in pedagogical practice, ensuring that educators were equipped to deliver high-quality, learner-centred instruction. The programme also invested in the development of learning materials that supported conceptual understanding and were readily usable within the constraints of local classrooms. This focus on usability and relevance contributed to the programme's ability to reach a broad range of learners, including those in under-resourced and historically underserved communities.

Tayari's commitment to working within government channels facilitated the continued implementation of its interventions at the county level. Evidence from programme reports and external evaluations indicates that this integration increased the likelihood of nationwide scale-up, contingent on demonstrated effectiveness. For instance, the programme's success in creating environments that fostered conceptual learning and improved numeracy outcomes was noted in studies by Gove et al. (2017) and Piper et al. (2018), which highlighted the replicability of Tayari's model and its adaptability to varying county contexts. The alignment with government priorities and policies further reinforced the sustainability of key programme components, as county education officers and local authorities assumed responsibility for ongoing delivery and monitoring.

In terms of successes, Tayari was able to sustain several core elements of its intervention. The programme's teacher training modules continued to inform professional development activities, and learning materials developed under Tayari remained in use in participating counties. The integration of classroom support strategies,

including ongoing mentorship and supervision, contributed to the retention of improved teaching practices. Additionally, the programme's emphasis on inclusive education—adapting methods and materials to cater to children with diverse learning needs—was institutionalised within county education plans, supporting the continued expansion of equitable access to quality early childhood education.

However, the programme also encountered challenges that affected the breadth and depth of sustainability. Variability in county-level capacity and resource availability sometimes limited the consistent delivery of Tayari's interventions, particularly in regions with constrained budgets or insufficient infrastructure. While the programme succeeded in embedding its activities within government systems, the degree of sustained impact was contingent on the level of ongoing support and investment from local authorities. In some cases, high staff turnover and limited opportunities for refresher training posed risks to the retention of new skills and practices introduced by the programme. Despite these obstacles, the overall evidence suggests that Tayari's model achieved a significant degree of sustainability, with key elements maintained and adapted within the Kenyan early childhood education landscape.

In summary, Tayari's approach to sustainability was characterised by systemic integration, capacity building, and the development of practical resources aligned with government priorities. The programme's success in sustaining its core components—teacher training, instructional materials, and inclusive classroom practices—was facilitated by its partnership with county-level authorities and its responsiveness to local needs. While challenges related to resource equity and capacity persisted, Tayari's experience provides valuable insights into the factors that underpin sustainable education reform in low-resource settings, and demonstrates the potential for well-designed interventions to achieve lasting impact when embedded within existing government structures.

3.1.9 Equity and Inclusion

PRIEDE: The PRIEDE project was implemented at the national level with a clear emphasis on ensuring equitable access to quality education for all learners, regardless of geographic location or socio-economic background. By strategically targeting both rural and urban schools, the programme sought to reduce disparities in

learning outcomes and improve educational opportunities in under-resourced regions. Targeted support and resource allocation enabled schools in underserved areas to build capacity and enhance teaching and learning outcomes.

An integral part of PRIEDE's approach was its comprehensive and inclusive stakeholder engagement. The project conducted a thorough stakeholder analysis and adopted participatory mechanisms that intentionally involved women and other vulnerable groups both in planning and implementation. This approach was operationalised through dedicated stakeholder and citizen engagement strategies, ensuring that the perspectives of diverse community members—including parents, educators, and local leaders—were incorporated into decision-making processes. Such inclusivity fostered a sense of ownership and accountability, further supporting the programme's responsiveness to local needs.

To address special needs inclusion, PRIEDE integrated the Universal Design for Learning (UDL) framework throughout its activities. UDL principles guided the adaptation of instructional materials, pedagogical approaches, and classroom environments to accommodate learners with disabilities. These adaptations included alternative formats for learning materials, differentiated instruction, and, where feasible, the introduction of assistive technologies. Through these measures, PRIEDE supported the participation of students with visual, hearing, or other learning challenges, ensuring their meaningful engagement in classroom activities.

Gender equity was also a central consideration in PRIEDE's design. The programme promoted gender-sensitive pedagogy and worked to remove barriers hindering girls' full participation and achievement in education. Teacher training included the identification and mitigation of gender biases, while school-level interventions encouraged equal participation and addressed obstacles encountered by girls, particularly those from under-resourced communities. By embedding gender responsiveness into its operational strategies, PRIEDE contributed to a more inclusive and supportive learning environment for all students.

TUSOME: The Tusome programme demonstrated a strong commitment to equity and inclusion through several targeted interventions. Central to its approach was the incorporation of Special Needs Education (SNE) training for teachers,

which equipped educators with the skills necessary to support students with diverse learning needs. Tusome adopted its instructional materials to ensure accessibility for learners and teachers with visual and hearing impairments, providing textbooks and teacher guides in braille and large print formats. These adaptations allowed students with disabilities to participate more fully in classroom activities and access the curriculum on an equal footing with their peers.

In addition to addressing special needs, Tusome placed significant emphasis on promoting gender equity within the educational environment. The programme integrated gender-sensitive pedagogy into its instructional content, actively working to identify and challenge gender stereotypes. Teacher training modules included strategies for fostering inclusive classrooms where both girls and boys could thrive, and efforts were made to remove barriers to participation and achievement, particularly for girls in under-resourced communities. By embedding gender responsiveness throughout its operations, Tusome contributed to creating a more equitable and supportive learning environment for all students.

Despite these achievements, there remain areas where the Tusome project could have further strengthened its equity and inclusion efforts. While the provision of adapted materials for visually and hearing-impaired learners was a notable advancement, expanding support to students with other forms of disabilities—such as cognitive or physical impairments—would enhance the programme's inclusivity. The development and integration of assistive technologies, differentiated instructional strategies, and more robust mechanisms for identifying and supporting learners with special needs could have increased the programme's reach and impact.

Moreover, while gender-sensitive pedagogy was promoted, continued efforts to address underlying social and cultural barriers to girls' participation in education are necessary. Community engagement initiatives that actively involve parents and local leaders in promoting gender equity, as well as ongoing monitoring and evaluation to track progress and identify persistent challenges, would have further strengthened Tusome's impact in this area. By building on its foundation of inclusive practices and continuously seeking opportunities for improvement, Tusome can serve as a model for advancing equity and inclusion within Kenya's

education system.

TAYARI: The Tayari project was designed with a strong commitment to equity and inclusion, as evidenced by its implementation in both public and Alternative Provision of Basic Education and Training (APBET) centres in Nairobi, alongside public centres in Laikipia, Siaya, and Uasin Gishu. This strategic expansion ensured that children from a wide range of socio-economic backgrounds and educational settings could benefit from the programme, promoting fairness in access to quality early childhood education. Tayari placed particular emphasis on adapting teaching methods and classroom infrastructure to accommodate diverse learning needs, thereby fostering an environment conducive to inclusive education.

Special needs inclusion was a core component of Tayari's approach. The programme actively sought to improve infrastructure and learning materials to be more accessible for children with disabilities, ensuring that physical and instructional barriers were minimised. Adaptations included modifications to classroom layouts, provision of accessible learning materials, and the integration of differentiated instructional strategies to support learners with various disabilities. Furthermore, Tayari promoted social integration by deliberately creating opportunities for children with and without disabilities to interact and learn together, thereby reducing stigma and fostering a sense of belonging among all students.

In terms of gender equity, Tayari recognised and addressed the unique challenges faced by girls in accessing and thriving within early childhood education settings. The programme encouraged gender-sensitive teaching practices, worked to eliminate gender stereotypes in classroom materials, and supported equal participation of boys and girls in all learning activities. Teacher training modules incorporated strategies to identify and mitigate gender-based barriers, especially those affecting girls from under-resourced communities. By embedding gender responsiveness throughout its implementation, Tayari contributed to a more inclusive and supportive learning environment for every child.

While the programme improved infrastructure and adapted instructional methods for children with disabilities, expanding the range and sophistication of assistive technologies could have enhanced access for learners with complex or multiple disabilities. Additionally, systematic mechanisms for identifying and supporting children with less visible or cognitive impairments

would have ensured that no learner was left behind. On the gender front, deeper engagement with communities to challenge persistent cultural norms and attitudes that hinder girls' education could have further advanced gender equity. Ongoing monitoring and evaluation, coupled with targeted interventions based on feedback from parents, educators, and local leaders, would have helped Tayari continually refine its approach to inclusion and equity.

3.1.10 Costing

PRIEDE: The project was funded by the Global Partnership for Education (GPE), at a total budget of Sh. 8 billion. This project, running from 2015 to 2019, aimed to improve early-grade mathematics competency and strengthen management systems in primary schools. The project was part of a larger effort to address gaps in education access and quality in Kenya. The World Bank provided financing for specific components, such as the procurement of educational materials. PRIEDE was reported to have used substantially higher rates for personnel.

TUSOME: The Tusome programme received financial and technical support from USAID to the tune of USD 88.8 million. The UK Department for International Development (DFID) contributed an initial investment of USD 5 million, although its involvement later scaled down. Since 2015, the Government of Kenya has invested USD 62.5 million to co-fund Tusome alongside USAID. This investment covered curriculum support officers, teaching and learning materials (TLM), and teacher support across all public schools and 1,500 low-cost private schools.

The financial partnership between USAID and the Kenyan government was notably balanced, where for every USD 1 the USAID invested, the Kenyan government contributed USD 0.70 to strengthen early primary education. One of the most distinctive aspects of Tusome's success is the Kenyan government's leadership in financing three national rounds of printing and distribution

of approximately 6 million books across different grade levels over five years. This decision was driven by strong demand and demonstrated the value of the Tusome learning materials.

The programme also developed the capacity of Kenyan education bodies to improve, supply and distribute new literacy materials. The Kenya Institute of Curriculum Development and the Kenyan Publishers Association developed new levelled reader frameworks, and the Kenya National Examinations Council developed new reading benchmarks and a national early-grade reading assessment. This resulted in substantial cost savings for the government, leading to more efficient procurement processes. The Tusome programme utilised lower-than-normal per diem and allowance rates.

TAYARI: Tayari was structured to offer low-cost implementation solutions for both national and county governments, with a clear focus on enhancing the quality of pre-primary education and increasing school readiness among young learners.

The Tayari programme was initially funded by the Children's Investment Fund Foundation (CIFF) from 2014 to 2018, with CIFF later extending the funding to 2019. The programme was deemed cost-effective, with an estimated additional cost of about USD 7 per learner per year, or USD 14 over two years, to significantly enhance learning outcomes in early childhood education. This investment resulted in learners being approximately three school months ahead of their peers who did not participate in the programme.

3.2 Comparative Analysis

3.2.1 Common/Divergent Features

The document analysis review established that all three programmes – PRIEDE, Tusome and Tayari – had common key features/divergencies, summarised in Table A2 (Appendix II)



4 FINDINGS FROM KEY INFORMANT INTERVIEWS

4.1 Key Informants and Inclusion Criteria

Information was sought from key informants who shared their insights and experiences on the implementation of large-scale programmes in foundational learning.

Table 3 (Appendix III) shows the key informants who were interviewed, the criteria for inclusion and the response rate.

4.2 Thematic Analysis and Discussion

4.2.1 Background Information

Appointments for interviews were made with key informants who were involved in large-scale foundation learning programmes. Table 4.1 summarises their response rates.

As shown in Table 4.1, the Key Informant Interviews (KIIs) were conducted among 16 participants who were involved in global and local foundational learning programmes. To contextualise the study problem and draw lessons on programme design, scale, impact, sustainability, cross-cutting issues, lessons, and recommendations, deductive thematic analysis was adopted, specifically, Braun and Clarke's (2012) six-step framework. The steps include: (1) familiarisation with the data; (2) generation of initial codes; (3) developing themes; (4) reviewing themes; (5) defining and naming themes; and lastly (6) producing the final report. This research advanced directly to the fifth and sixth phases, and the resulting themes are presented in Table 4.1.

Table 4.1: Thematic Analysis Matrix

Theme	Number of Respondents	Number of Coding References
Programme Design	16	55
Scale	16	42
Impact	16	42
Sustainability	16	26
Cross-Cutting Issues	16	46
Lessons and Recommendations	16	15

4.2.2 Programme Design

The respondents were asked to describe key goals of the programme they had been involved in. What cuts across in the analysis is that foundation learning programmes aimed mainly to improve the literacy and numeracy of learners in Grades 1–3 and pre-school level. The design of the foundation learning programmes was reported to have the following components: structured pedagogy, teacher training, quality instructional materials, stakeholder engagement and real-time data systems for monitoring and evaluation.

The programmes also focused on inclusion aspects by supporting low-cost schools and the provision of learning materials for Special Needs Education. In support of these insights, some of the respondents asserted that:

“Tusome was aimed to improve learning outcomes in literacy through 5 elements—provision of quality instructional material, teacher support, systems support, collection of real-time data for decision making” (Resp. 1);

“PRIEDE was to enable the levels to work math problems with ease using learner-centred approaches, positive attitude toward math” (Resp. 12);

“Teacher training and professional development were part of the programme in Tayari...For example, Tayari-ried to help teachers to have more skills in maths skills” (Resp 2);

“TARL main aim is to ensure all children get foundation literacy skills particularly and also numeracy skills” (Resp 5).

The aim of the literacy programme is to try to get every learner to be able to read and calculate with confidence by the time they are 10 years... we hope by 2030. Literacy programme is to get children read and write in their home language, and also to do coding and also to develop motivational tools to read...and to expose learners to different materials, to provide them with visually and engaged materials...we don't believe only teaching will help, but rather what other range of activities can help create curiosity among learners. (Resp. 8)

The research proceeded to probe contextual factors that may have influenced the governments to roll out large-scale foundational numeracy

programmes. The outcome revealed systemic challenges in education systems, such as persistently low literacy and numeracy outcomes, inadequate teacher training and support, misaligned curricula, and poorly designed learning materials, which collectively hindered learners' achievement levels. From these insights, the key takeaway is that a multi-faceted approach, including curriculum redesign, teacher training, improved materials, and stronger government support, is critical to reversing low literacy and numeracy outcomes. In support of these claims, one of the respondents accentuated that:

“There was poor performance in KCPE, learners school dropout, children moving from lower primary to upper without knowing how to read or do calculation...” (Resp. 13).

Others said that:

“...informed by research done by UWEZO that showed that a learner in Grade 4 could not carry out mathematical operations meant for Grade 3. Even those in Std 8 could not carry out some operations for Grade 6, those in Grade 1–3 were struggling to do mathematical operation meant for their level, a gap in transition from pre-primary to lower primary with regard to pedagogy...” (Resp 3)

“It was to a large extent influenced by large reforms carried out by the Ministry of Education in the education sector and therefore the programme was to address some of the new policy areas...also the requests to build capacity of teaching staff capacity of state-run schools...there is significant demand for government to learn how to run a large-scale programme...there is enough budget to run the mission properly—to print materials eg. maths kits.” (Resp. 4)

“Factors include: the challenge and evidence generated by low literacy levels among Grade 1–3 in the country...NASMILA report of 2020 indicted low report literacy levels at foundation level...also Tusome endline report shown low literacy levels among early grades in literacy.” (Resp. 6)

On the question of establishing how numeracy was prioritised in the design, the outcome showed that numeracy inclusion was inconsistent, present in some programmes and absent in others, with varying implementation strategies. For instance, Tusome did not include “numeracy” while PRIEDE integrated both “literacy and

numeracy". Some of the respondents had this to say:

"No numeracy in Tusome, but the pilot of PRIMR 2011–2014 had both literacy and numeracy. Numeracy was implemented in PRIEDE" (Resp 2);

"Yes, in TARL, half of the programme is numeracy and half on literacy" (Resp 5);

"I have been involved in the Kenya Primary Literacy Programme, which is still ongoing. The programme picked from Tusome. In this programme, literacy is prioritised and not numeracy" (Resp. 6)

"Numeracy was not prioritised. The programme concentrated on English and Kiswahili" (Resp. 10).

Numeracy is in a different programme called Bala Wande. Funda book is for literacy—they have not been rolled out in country-wide yet. We are still piloting the materials...the numeracy programme involves use of book and box of materials that learners use...the first page is on mental maths then they move to manipulative tasks and then there is a written component. (Resp. 8)

Numeracy was emphasised through the use of structured approaches involving "mental math, manipulatives, and written exercises". Other key strategies included teacher training, use of locally available materials, group work, parental engagement, and practical activities, e.g., number lines, abacus and regrouping. However, some respondents noted that numeracy was "not prioritised", with greater focus on literacy, especially in the Tusome programme. In support of this, one of the respondents mentioned that:

Yes, we did language and Maths and also life skills. On implementation, we focused more on Maths and literacy...we made sure on materials to use before designing the lesson...we made sure the resources were minimal and locally available materials, mainly locally available materials. We gave the materials to teachers...giving them the materials is very important...when you give them materials, they take it more positively. (Resp 2)

On the question that explored whether the programme aligned with CBC, teacher training policy, or other reforms, the results showed that programmes like Tusome, PRIEDE, Tayari, and others were aligned with national education reforms such as the Competency-Based Education (CBE), teacher training policies, and

other frameworks, though some required adjustments over time. The bottom line is that, overall, alignment was strong but required ongoing adaptation to fully synchronise with evolving reforms. In support of these claims, one of the respondents mentioned that:

"We make sure the programmes are aligned with the country's curriculum and also the teacher policy. We looked at the documents e.g. curriculum at PP1 and PP2" (Resp 2).

4.2.3 Scale

With the intent to explore the scalability of the programmes, the respondents were asked to outline key enablers and barriers to scalability. Key factors noted to support scale-up included strong government partnerships, adaptable programme designs, and alignment with national policies. However, challenges such as insufficient teacher training, resource constraints, and varying regional implementation capacities were cited as major limitations. These findings highlight the importance of systemic support and flexibility in achieving sustainable, large-scale impact. In support of these claims, some of the respondents had this to say:

One thing that helped was the piloting with the Ministry. This helped Ministry to identify what works. We also had champion teachers at schools who supported with implementation. There were also good champions at Ministry level working at district levels...also with influential partners and funders and other NGOs to support Ministry in scale up, aligning the programme to Ministry priorities...also co-creation of materials...letting the Ministry drive also is very important. In terms of challenges, funding is a challenge to the Ministry; we relied on external sources of funding. (Resp 5)

Yes...critical designs that is workable and easily acceptable by the government...the teacher training component and teacher training components also are critical. We are working in 5 states. All these critical outputs are going to support our schools...as we progress, we are supporting certain districts that are still lagging in the implementation of the initiative. (Resp. 4)

We made sure we were using the KICD curriculum, we made sure we had book ratio of one to one... it was specifically for foundation learning. We knew that if a learner has good foundation learning, then they will not have challenges as they progress. (Resp. 7)

Respondents were asked to explain how programme scale was operationalised, including whether implementation followed a national rollout, targeted regional approach, or a phased expansion model. The findings reveal that the operationalisation varied across the programmes, with some adopting a national rollout, e.g., leveraging Tusome's infrastructure for immediate countrywide implementation, while others followed a phased model, e.g., starting in select counties or provinces before expanding, as seen in Zambia's initial 2-province pilot. Several programmes began with targeted pilots in disadvantaged schools or regions before gradually scaling up with government support, often involving partnerships with Curriculum Support Officers (CSOs) and ICT-based teacher training.

Key scaling strategies included reliance on existing government systems, e.g., DICECE, provincial education departments, data-driven approaches, e.g., school performance quantiles, and structured expansion plans where local authorities gradually took ownership. However, challenges emerged in sustaining gains, particularly post-COVID-19, highlighting the tension between rapid national deployment and more gradual, evidence-based scale-up approaches. Some of the respondents mentioned that:

“In TARL, this was done in Zambia. There were 10 provinces we started with 2 provinces before rolling out to the rest of the provinces” (Resp. 5);

“At Central Square Foundation on the numeracy programme, we first started within limited areas first then slowly roll out to other areas. Phase one all inputs reach all schools in scale two we move to districts” (Resp. 4).

Another mentioned:

“We began with small number of groups, then rolled up to other areas; schools are divided into quantiles. On the first 1–3 are not fee-paying, they operate on government budgeting...the schools in poor areas...we have worked with non-paying schools with aim to level the field to some degree. The schools in top quantiles are always doing better in terms of performance. We started with small number schools...we begun with a pilot of few schools...we worked with provincial departments of education so that they take control. Next step was for them to add 50 schools on their own, then they were to handle materials distribution also, then decision was made to roll out in the entire province.” (Resp 8, Funda Wande)

The research investigated the role systems like MoE, TSC, CEMASTEIA, and TTCs played in enabling scale. The findings show that they played a critical role in scaling programmes by providing institutional support, policy alignment, and resource mobilisation. Key contributions by MoE included anchoring the programmes, forming technical committees, and integrating interventions into national plans. Entities such as TSC also facilitated teacher training, school monitoring, and follow-ups, though sustainability varied post-funding. This is besides the CEMASTEIA and TTCs' embedded methodologies, for instance, lesson studies in teacher development and coordinating regional implementation. Other multi-stakeholder collaborations, such as KNUT, publishers, and development partners, assisted in material production and advocacy. One respondent mentioned that:

Yes as a national programme, we have to work with other agencies. The programme was anchored at the Ministry of Education, where the

national coordination office is based. We had the component lead at the MoE, technical working teams from KNEC, KICD, KISE, KEMI and TSC; all these were involved. Within the Ministry, we had quality assurance team also. (Resp 6)

At CSF, yes the we work closely with the Ministry of Education. They have budget to support units and we programme units. Our programme becomes state materials-because of the support from the government. We don't have to ask for permission to reach to schools training...there is a lot of synergy in working out on activities'... there is deep partnership. (Resp. 4)

4.2.4 Impact

In this section, the respondents were asked to provide the outcomes that were observed in learner performance as well as the teacher practices. The analysis showed improvements in both learner performance and teacher practices. In addition, learners showed marked progress in literacy and numeracy skills. The evidence is supported by assessments and evaluations, with many learners reaching grade-level competence and meeting national benchmarks. Positive outcomes included higher learner engagement, reduced absenteeism, and stronger foundational skills. Teachers also enhanced their pedagogy through structured methodologies, better lesson planning, and increased use of learner-centred approaches. However, some teachers found the programmes overly prescriptive or time-intensive, impacting syllabus coverage.

Overall, stakeholder ownership was high, with teachers appreciating the provided materials and training, though sustained impact depended on continued support. One of the respondents had this to say:

“Tusome helped in improvement in reading, vocabulary, spelling, writing and knowledge of storytelling, sounds, fluency and vocabulary. Teachers enjoyed and the workload was reduced because most of the materials were provided” (Resp 14).

Another numeracy expert observed that:

First, we have seen very high ownership...we are seeing extremely high ownership among all the stakeholders. We see very high compliance; teachers are happy since the materials we are giving them are useful to them. Many teachers are now using the materials to a certain level. Compliance and ownership is high...outcomes... early green shoots are visible. Now we are

seeing tools, we administer a tool...learners are becoming competent across all states because of the programme. (Resp. 4)

To determine the methodology for impact assessment, the research went ahead to examine whether a tool was applied or a study was conducted, as well as the findings that emerged. The outcome showed that the most used tools or studies to assess impact included baseline, midline and endline evaluations, internal assessments, and independent evaluations by organisations like APHRC. Some embedded assessments within routine monitoring, while others relied on structured tools like EGRA (Early Grade Reading Assessment) and EGMA (Early Grade Mathematics Assessment), administered annually via digital platforms. A few relied on Kenya's national assessments (e.g., Kenya Early Years Assessment, KCPE) for comparison over time. Classroom-level tools, teacher-administered questionnaires, and CSO-led lesson observations (using tablets/dashboards) were also common. One of the respondents mentioned that: “Midline evaluation, during the teacher support CSO picked learners and did an assessment, and this was reflected in the dashboard” (Resp 1). Another respondent clarified that: “We did internal assessments, APHRC also did an independent evaluation...assessment was embedded with some assessments...this enabled to do a quick check, no formal assessments” (Resp 2).

To assess potential disparities, respondents were asked about variations across regions, genders, or school types. The analysis showed variations across regions and school types, but minimal differences by gender. Urban and peri-urban schools generally outperformed rural and remote ones, often linked to better resources, teacher support, and facilities. Additionally, semi-arid regions received more targeted interventions, while private schools were sometimes excluded. Gender disparities were rare, though a few instances highlighted boys excelling in math or girls in reading. Sub-county-level differences emerged due to environmental or logistical challenges. However, some reported minimal variations, attributing equity to uniform programme implementation, standardised materials, and consistent teacher support across all regions. In support of these assertions, some of the respondents mentioned that: “There were variations. APEBT did better than public school. Private schools were left out...no variation in gender...regional variations in terms of teacher support; the semi-arid were supported more than the endowed regions” (Resp. 1); “Urban/

peri-urban schools were doing better compared to those in remote areas, but not specific in terms of gender” (Resp 3). Another respondent clarified that: “Yes, some provinces with high incomes there were variations where they reported high performance compared to low-income provinces...no variations in genders, in school type...schools in rural areas have lower outcomes compared to those in urban areas” (Resp 8); “Not much gender variations in terms of performance, not too much...but of course, urban centres are doing better than rural schools” (Resp. 4).

The evidence indicates that variations in educational outcomes are most pronounced across regions and school types, with urban and peri-urban schools demonstrating relative advantage over rural and remote contexts. Targeted interventions in semi-arid areas appear to have contributed positively, while the exclusion of private schools in some initiatives created further disparities. Gender variations in performance were minimal. Importantly, several respondents highlighted that uniform programme implementation, standardised learning materials, and consistent teacher support helped reduce inequities across settings. Addressing these disparities requires sustained investment, inclusive policy design, and tailored support mechanisms that recognise contextual challenges without compromising programme consistency. These findings are summarised in Table A4 (Appendix IV).

4.2.5 Sustainability

This section explores respondents’ perspectives on sustainability, particularly regarding design elements that contributed to sustaining programme outcomes after closure. The outcome revealed sustainability practices such as strong government integration, targeted instructional strategies, and structured support systems. However, several challenges were also noted, including inconsistent funding, material shortages, untrained teachers, and transitions to new curricula. While some elements, such as teaching methods and materials, persist, gaps remain due to logistical and motivational barriers. Respondents mentioned that:

The government support is very important in these initiatives to ensure continuity. The ownership by teachers is also very important...also having project management units to monitor the progress in implementation. It is also important to set up district management units. We

also have a small team who work with Government to work on fidelity of the programme. (Resp 4)

We are in process of supporting Government to run the programme independently. We do training, mentoring, and development of materials...accountability and supporting government and teachers...we do also work in supporting districts. We have established master trainers who support MoE in training. There is also a coordinating committee at the national level and to make sure the programme is sustained. (Resp. 4)

On whether there was a deliberate handover to the government or capacity-building, the study established mixed perspectives. Some programmes had structured transitions, with progressive handovers, inbuilt studies, and shared resources, e.g., materials, copyrights, and best-practice videos, while others lacked sustained capacity-building post-programme. A few collaborations with the government continued, with plans for eventual exit, whereas others faced challenges like funding gaps or minimal follow-up training. Overall, successful handovers depended on deliberate planning and government involvement, but inconsistencies existed in post-programme support. In support of these affirmations, one of the respondents mentioned that “It was progressive and the programme had inbuilt a study on study gaps and a report shared with government” (Resp 1). On the flip side, some were “not aware” (Resp 3) and “do not think so” (Resp 14).

The bit of handover of hardware in terms of materials...materials were handed over to the Ministry...also letters written on hardboard. All the materials have been handed over to the Ministry, including the furniture. Building of capacity to teachers has also been handed over to the CSOs...books we reviewed them and the copyright handed over to Kenya Literature Bureau, which holds the copyright. (Resp 6)

Besides, the respondents were asked to give their opinion on what they would consider the strongest sustainability feature. The outcome showed that the strongest sustainability features highlighted include government integration (that is, mainstreaming programmes into state structures), co-creating materials, and leveraging existing budgets, alongside teacher-focused support, such as simple, adaptable guides, mentorship models, and teacher champions/ CSOs to cascade training. Cost-effective, piloted materials and measurable learning outcomes

further reinforced sustainability, ensuring solutions were scalable and Ministry-led. Teacher training emerged as a recurring priority, emphasising capacity building and motivation as key drivers of long-term impact. Some of the respondents mentioned that:

It is very important to work with the government, having all dimensions covered. The government also wants a working solution...helping state to develop materials and supporting state to run the entire programme. Two, it is also important to have mentors on the ground who can support the teachers. These mentors also are critical in training others. The state support in terms of budget has budget to support mentors; it becomes very easy to work with high authorities including the state. If they don't exist, you have a tall order to hire mentors. It will have a lot of resistance...embed your solution in existing pathways because they already have budget to support. (Resp 4)

When it comes to early learning programmes, which are essentially managed by county governments, their support is very critical, especially when it comes to distribution of materials and providing other support systems. Technical support also is important, like working with experts in numeracy. (Resp 16)

Overall, embedding solutions within existing systems and focusing on teacher development were seen as key to long-term sustainability.

4.2.6 Cross-Cutting Issues

In this section, respondents were probed on whether socio-emotional learning (SEL) was integrated in any way, and the outcome showed that some of the cross-cutting issues identified included mainstreaming of programme activities into government structures, creating simple and teacher-friendly materials, fostering learner-teacher interaction, and securing government support for mentorship and budgeting. Social and emotional learning was found not to be explicit, but rather teachers integrated it into teaching. Teacher champions/CSOs, capacity building, and relevant, adaptable materials were also emphasised, along with the importance of co-creating resources with the Ministry and ensuring continuous teacher training and motivation. In support of this claim, one of the respondents mentioned that:

“Methodology...yes, we kept on telling them to ensure they ensure they use gender sensitive language. SEL was intended to be

integrated in teaching and teachers were trained on these approaches” (Resp 7).

In reference to numeracy programmes in the global south, a respondent mentioned that:

Our curriculum involves personal and social well-being and life skills are incorporated and these depend on the teachers approach. There are ongoing training and awareness for the teachers on how to bring out these...it's a huge thing in foundation and we have to help learners to develop independent learning. (Resp 8)

On the question of whether gender equity or inclusion issues were addressed, the study established that gender equity and inclusion issues were partially addressed in the educational setting in the following manner: teachers used diverse materials to engage all learners, actively involved girls to boost confidence, and accommodated those with sight issues, though materials for children with special needs were lacking. Group activities included mixed genders, and both male and female teachers were trained in gender-responsive pedagogies, though their application was inconsistent. Collaboration between genders was encouraged, with peer support and team teaching observed. However, specific gender-responsive strategies were not systematically used, and inclusion for learners with disabilities remained a gap. In support of this perspective, one of the respondents remarked that, “Lower grades majority teachers are female...for learners they were mixed up in the activities. No specific gender responsive pedagogies used...but teachers were asked to address all learners” (Resp 10).

4.2.7 Summary of the Themes Emerging from the Data

A thematic analysis of the Key Informant Interviews identified several dominant themes reflecting the primary priorities of stakeholders. Firstly, **teacher training and continuous professional support** were consistently highlighted as critical, with informants emphasising the necessity for comprehensive initial training, ongoing coaching, and sustained professional development to enable the effective implementation of structured pedagogical approaches. Secondly, the **provision and quality of instructional materials and resources** emerged as a recurring focus, particularly the importance of lesson-mapped guides, learner workbooks, and scalable materials supporting both teachers and

students. Thirdly, **sustainability** was identified as a key theme, with respondents stressing the need for project integration into existing government systems, alignment with funding streams, and the engagement of school personnel to ensure long-term impact. Fourthly, robust **monitoring, evaluation, and feedback mechanisms** were regarded as essential, especially through the use of digital tools for classroom observation, systematic data collection, and formative assessment to inform instructional adaptation and ensure accountability.

Collectively, these themes indicate that capacity building, resource provision, systemic integration, and data-driven improvement are regarded as foundational elements by key informants for the success of foundational learning initiatives.

4.2.8 Lessons

When asked about the key lessons from the programme, including what worked well and what did not, respondents highlighted several successes. These included effective government transition plans, hands-on teacher training, simplified teaching materials, and strong ministry support. However, challenges emerged, such as poor government absorption of certain components like teacher support, weak succession planning, logistical delays, teacher transfers, and abrupt programme closure without follow-up. Additionally, teacher turnover, cascade model dilution, and technology gaps underscore the need for adaptive implementation and localised solutions. Key lessons highlighted the importance of system integration, affordable solutions, and structured pedagogy. Meanwhile, gaps such as rigid implementation and decentralisation hurdles must be addressed for

sustainability. In reference to the Kenya national literacy programme, one of the respondents noted that:

What is working: One, there is overwhelming support from MoE and TSC...also senior officers at the ministry are very supportive. Two, interest and uptake by teachers is very high and overwhelming; they have always been asking what next. Three, our cascade model of training from national to regional, CSOs and teachers at the classroom level, whereby one level supports the next, has worked very well; the trainers sat in classroom to support teachers to see what happens at the classroom level. Four, the planning played a big role which enabled us to achieve our targets. Five, the inclusivity of relevant agencies in the programme, eg., TSC, KISE, Quality Assurance and Standards officers, KNEC etc...this was very important. In terms of what did not work out very well...challenges of logistics, eg., bringing teachers together at zonal level especially in expansive counties, logistics in distributing materials... Three, also in some cases, some of the teachers were feeling they are almost exiting the service; these they were not very keen. The young teachers were feeling like their potential was under-utilised well, that they were supposed to teach in an upper class. (Resp 6)

Another respondent observed that:

There was need to understand that counties are not homogeneous when it come to their cultural contexts, and therefore there is need to unpack instructional materials to fit in different cultural contexts...also, the use of the language of the catchment area. (Resp. 16)



5 CONCLUSIONS

This section entails key lessons picked from literature and key informant interviews on what worked and what did not work in reference to foundational learning programmes.

5.1 What Worked

PRIEDE

Teacher Training and Support: This focused on training teachers in effective early-grade mathematics teaching methodologies, which improved teacher pedagogical skills and capacity, leading to improved numeracy outcomes.

Pedagogy: A core component of the project was equipping teachers with effective methodologies for teaching Early Grade Mathematics (EGM), including strategies to actively engage learners, integrate ethical values, and empower students during lessons. Additionally, the project embedded lesson plans within the teacher guides, which eased the teachers' time in preparing lesson plans. The PRIEDE programme had a greater impact on improving procedural mathematics tasks than on conceptual tasks. This distinction highlights the programme's stronger influence on step-by-step problem-solving skills rather than on deeper mathematical understanding.

Instructional Materials: PRIEDE addressed the critical challenge of resource availability by ensuring a one-to-one learner-to-textbook ratio in mathematics for early grades. The programme provided teacher guides, textbooks, learner workbooks and homework books. The provision of these materials eased the teachers' work and

enhanced learners' confidence and performance. The embedding of the lesson plans within the teacher guides eased the teachers' time in preparing lesson plans.

Stakeholder Engagement: The initiative placed a strong emphasis on collaboration with teachers, parents, and community members to build a shared commitment to education. By promoting community involvement, the project fostered a sense of ownership and support that contributed to its success.

Accountability: PRIEDE reinforced accountability mechanisms at both the school, county and national levels, enhancing transparency and responsible management of resources. There was a seamless synergy among different players that enhanced effective reporting, monitoring and evaluation, and feedback.

Impact and Inclusivity: The PRIEDE programme embraced both formal and non-formal schools. Through the programme, teachers in non-formal schools were able to significantly improve their pedagogical and instructional skills in teaching math compared to the teachers in formal schools.

TUSOME

Programme Design: The design of the programme eased teachers' workloads, especially in lesson planning, which encouraged their participation and support. Teachers quickly recognised that lesson planning was easier and less time-consuming, and learning outcomes improved significantly compared to other teaching methods.

Pedagogy: Tusome revamped the curriculum and teaching methods by adopting a structured approach to literacy instruction.

Instructional Materials: The programme ensured universal access to high-quality, low-cost learning materials—including teacher guides in both English and Kiswahili. Over 80 per cent of teachers preferred using Tusome books because they simplified classroom instruction, reinforcing the importance of practical and accessible tools.

Teacher Training and Support: Teachers received comprehensive training on the new pedagogy and resources, supported by regular classroom observations and feedback from coaches and mentors. This initiative led to strong teacher buy-in, commitment, and support of the programme.

Technology: Technology played a key role, with tools like tablets and cloud-based systems used for monitoring, data collection, and assessment, enabling timely feedback and programme adjustments.

Inclusivity: Tusome's experience shows that including low-fee private schools and schools in refugee settings adds significant value with minimal additional cost. These schools should not be excluded from large-scale national programmes.

Sustained Government Commitment: The Government of Kenya's continuous investment and leadership were central to Tusome's success. Successful programmes must be embedded in existing government structures and education strategies. Over time, the government: increased its financial contributions to cover additional grades and nearly 1,500 low-fee private schools, printed and distributed materials at a one-to-one ratio across various subjects, demonstrated ownership by allocating its own resources for printing and distributing approximately 6 million books over five years. This long-term engagement significantly contributed to the programme's scale and sustainability. Tusome also prioritised sustainability by planning a smooth transition to government ownership. This involved integrating key components into existing education systems and building capacity at all levels.

Stakeholder Engagement: The programme actively engaged stakeholders at the local, county, and national levels to foster ownership and drive successful implementation. Involving all relevant stakeholders early in programme design and piloting interventions collaboratively

increases ownership and smooth integration into local systems.

Data-Driven Evidence: Data was used to track student progress and guide informed decision-making, reinforcing the programme's effectiveness.

Proactive Donor Support: USAID's flexible and evidence-driven approach was critical. USAID: displayed patience in awaiting results, supported complex evaluations involving multiple treatment groups, and adapted based on teacher feedback and real-time learning.

Affordable and Sustainable Implementation: The programme was designed to be cost-effective, with a fixed budget of USD 5 per student, amounting to a government expenditure of USD 14.2 million for all primary students. Tusome invested in building government capacity through training Curriculum Support Officers (CSOs) and headteachers, and provided teachers with tablets and digital instructional support tools.

Technology-Driven Quality Improvement: Technology played a key role in enhancing instructional quality and teacher support. Tusome: provided tablets for CSOs and teachers to track student performance and deliver feedback, integrated classroom observation systems and used technology to improve monitoring, and continuously refined the programme based on teacher and stakeholder feedback.

Institutional Strengthening and Systemic Change: Tusome contributed to the long-term strengthening of Kenya's education system by: improving capacity to create and distribute literacy materials, supporting the Kenya Institute of Curriculum Development (KICD) and the Kenyan Publishers Association to develop national reading frameworks, and establishing new reading benchmarks and strengthening early-grade reading assessments led by the Kenya National Examinations Council.

National Scale and Policy Integration: Tusome was implemented nationally and sustained for nearly a decade, effectively shifting Kenya's education system towards ensuring foundational literacy for all children in Grades 1 and 2.

TAYARI

Design of the Programme: Tayari's design is that the programme was implemented and tested under real-world conditions, making it more feasible to scale up if proven successful. This

practical, system-embedded approach increased the likelihood of achieving similar results in broader implementations. Its success can be attributed to a holistic approach that integrated teacher training, high-quality learning resources, and active community involvement. Tayari focused on critical aspects of early childhood development to ensure that children entering primary school were academically, socially, and emotionally prepared.

Teacher Training: It worked by providing teacher training, instructional support, and learning materials, while also promoting better hygiene practices and health-related record-keeping.

Instructional Materials: The Tayari programme in Kenya utilised various instructional materials to enhance early childhood development and education. These included teachers' guides, learner workbooks, Big Books, and charts, all of which were often provided on tablets to make them easily accessible for teachers and instructional coaches. The programme also emphasised the importance of high-quality instructional materials to improve curriculum delivery and learning coherence.

High-Quality Learning Resources: The Tayari programme developed and distributed learning materials—such as workbooks and teacher guides—to support instruction in literacy, numeracy, and other foundational areas.

Stakeholder engagement: The Tayari programme in Kenya engaged several key stakeholders, including the Ministry of Education (MoE), RTI International, the African Population and Health Research Center (APHRC), and County Governments. Additionally, both public and Alternative Provision of Basic Education and Training (APBET) ECDE centres were involved, particularly in Nairobi. The Children's Investment Fund Foundation (CIFF) also sponsored the programme.

5.2 What Did Not Work

PRIEDE

Infrastructure: Many schools lacked sufficient infrastructure, including classrooms, desks, and other essential facilities, to support the increased student enrolment and the demands of the new curriculum. This resulted in overcrowded learning environments, making it challenging for teachers to implement the programme effectively.

Disconnect with CBE: Despite incorporating elements of competency-based education (CBE), such as experiential learning, the PRIEDE project faced challenges in alignment with the new curriculum. Many teachers reported that they were not sufficiently prepared to implement the curriculum or adapt to the pedagogical approaches introduced. In some cases, teachers appeared to struggle with fully understanding and applying the principles of CBE, while others felt overly anchored in the PRIEDE methodology, limiting their openness to change. These gaps in both capacity and attitude likely disrupted the continuity of some project components and hindered the integration of CBE practices.

Inclusivity: The project faced difficulties in reaching all learners, especially those from informal settlements and those living with disabilities, further limiting its overall impact.

Materials: Though the lesson plans were embedded within the teacher guides and eased the teachers' time in preparation, unfortunately, this reduced teachers' innovativeness and creativity in lesson planning.

TUSOME

Political Uncertainty: A change in government leadership created uncertainty about Tusome's continuity. However, ongoing government commitment helped ensure successful implementation. Concerns were also raised about the programme's long-term sustainability, particularly in relation to potential funding shortfalls and the risk of discontinuation due to shifting political priorities.

Stakeholder Buy-In: Initially, teacher unions were hesitant to support the scale-up of Tusome, preferring to conduct their own evaluations based on anecdotal evidence. After their independent assessments, they fully supported the programme without requesting additional resources. Additionally, some stakeholders felt excluded from key decision-making processes, citing a lack of adequate consultation during the programme's implementation. A notable issue involved the introduction of new reading materials that were not initially listed in the official "Orange Book" of approved textbooks, raising concerns about compliance with established procedures and policy guidelines.

Regulatory Barriers to Innovation: Kenya's complex regulatory environment, with multiple stakeholders across education levels, posed challenges to rapid innovation. However, Tusome

successfully navigated these hurdles by: (i) aligning with national policies, (ii) collaborating with key stakeholders, (iii) utilising existing government structures to ensure scalability and sustainability and (iv) promoting community engagement to foster a reading culture beyond the classroom.

Instructional Support: Inconsistent use of instructional support across counties and limited application of classroom observational data for targeted interventions. While the programme established a feedback mechanism through existing government structures, the extent of its implementation varied significantly, resulting in unequal support for schools and teachers and potentially affecting the programme's overall impact.

Data Use: Although valuable classroom data were collected, they were not fully utilised to deliver customised support or address specific learning gaps.

TAYARI

Instructional Resources: One key issue was the limited impact on learner-to-textbook ratios, particularly in public ECDE centres. Despite the provision of instructional materials, access to books remained generally low across both public and APBET centres, with no significant difference observed between treatment and control groups in public settings. This suggests that the distribution of materials did not substantially improve resource availability.

Assessment: Some assessment tools—especially those targeting executive function and socio-emotional development—did not perform as expected, indicating a need for refinement or alternative strategies to effectively measure and support these competencies.

Sustainability: The programme also highlighted disparities in resource distribution between public and APBET centres and across different counties, notably between Nairobi and others. Although Tayari aimed to create a cost-effective and scalable model for ECDE, ensuring long-term sustainability remained a challenge, particularly with respect to consistent resource allocation and sustained community engagement.

5.3 What is Required for Sustainability

The Numeracy at Scale report identifies three key elements that are essential for the effectiveness of large-scale numeracy programmes (Learning at Scale, 2023).

5.3.1 Pedagogy

Instructional approaches that do not follow a single, prescribed method; instead, they require flexible, evidence-based approaches tailored to learners' needs. Engaging all students in modelling and explanation is essential, and adequate time must be allocated for student practice. While manipulatives can be helpful, they are not sufficient on their own; there must be a strong and explicit connection between concrete materials, visual representations (such as drawings), and abstract mathematical symbols. Furthermore, assessment alone is not enough; teachers must be equipped to interpret and use assessment data to adjust and inform their instructional strategies.

5.3.2 Instructional Support

Providing high-quality teaching and learning materials to ease the instructional burden on teachers. Just as students benefit from repeated practice, teachers also need structured opportunities to practise new instructional skills during training and collaborative meetings. A sustained focus on developing teachers' Mathematical Knowledge for Teaching (MKT) through professional development and ongoing support is critical. Additionally, ensuring that teacher support systems are well-aligned and mutually reinforcing can help overcome common constraints such as limited finances, logistics, and human capacity. Supportive and friendly coaches are essential to help build a positive professional learning environment for teachers.

5.3.3 Systems

Education systems must rely on robust data and evidence to guide policy and instructional decision-making. A strong emphasis on the continuous professional development of educators across all levels is key to long-term improvement. For learning outcomes to be enhanced at scale, programmes should be designed with scalability in mind and implemented through existing government systems. Strategic investments by governments and external donors in resources that strengthen instructional quality are essential.

to ensuring sustainable improvement in foundational learning.

The numeracy at scale further recommends 14 elements that are important for the success of a numeracy programme for foundation learning. These elements demonstrate the importance of aligning closely with government systems, particularly in curriculum, teacher support, and monitoring, while also underscoring the value of repeated, in-person training to build and sustain teacher capacity.

The 14 essential programme elements are as follows:

1. Learning aids for students (e.g., counters, number cards, place value materials, etc.)
2. Programme materials aligned to government curriculum
3. Structured teacher's guides (scripted lessons)
4. Continuous and formative assessment
5. Instruction targeted to student level (differentiated instruction)
6. Focus on developing conceptual understanding
7. Pair work or group work
8. Using concrete materials and resources (manipulatives)
9. Coaches who are government staff
10. Initial face-to-face training
11. Refresher face-to-face training
12. Teacher training (lowest level of cascade) done by government officers
13. Government staff responsible for conducting monitoring
14. Programme invested in capacity building at the decentralised level (RTI, 2022)

First, the instructional core must be strengthened by ensuring that learners have access to simple but effective learning aids such as counters, number cards, and place value materials, which support active engagement in lessons. Alongside these, programmes must provide materials that are directly aligned to the government curriculum, ensuring coherence with national expectations. Teachers benefit from structured guides with scripted lessons, which reduce ambiguity and offer concrete models for daily instruction.

Learning also improves when teachers employ continuous and formative assessments, enabling them to adapt instruction in real-time. A critical feature is differentiated instruction, which targets teaching to the actual level of the learner rather than assuming uniform progress across a class. Furthermore, programmes should deliberately foster conceptual understanding, moving beyond rote memorisation to ensure children grasp the underlying logic of mathematics or literacy. The use of pair work and group work allows learners to support one another, while manipulatives and concrete materials make abstract ideas more tangible and accessible.

The second layer relates to teacher professional development. Programmes must begin with initial face-to-face training to familiarise teachers with methods and materials, followed by refresher training sessions at multiple points to reinforce skills and address challenges emerging from practice. Importantly, teacher training should be delivered at the lowest cascade level by government officers, rather than relying solely on external facilitators, to strengthen ownership and reduce the risk of message dilution.

Finally, at the system level, effective programmes embed support structures within government machinery. Instructional coaches who are government staff play a central role in classroom visits and ongoing mentorship. Similarly, government staff should be responsible for monitoring programme implementation, which not only ensures accountability but also integrates new practices into routine supervision. To sustain these efforts, programmes must invest in capacity building at decentralised levels, equipping county and sub-county officials with the knowledge and tools needed to provide consistent, context-sensitive support.

Together, these 14 elements form a coherent package that balances classroom practice with systemic integration. They show that lasting impact depends not only on what teachers and students do inside classrooms but also on the structures of training, coaching, and monitoring that surround and sustain those practices.



6 PROGRAMME DESIGN FOCUS AREAS AND RECOMMENDATIONS

6.1 Recommendations for the Next Project Design

Prioritise continuous teacher training and coaching: Future numeracy programmes should invest in ongoing teacher professional development rather than one-off training sessions. This should be delivered at the school level and reinforced with structured coaching and mentorship, ensuring teachers have sustained opportunities to refine practice and address classroom challenges.

Establish teacher communities of practice: Building workable communities of practice among teachers can create peer-support networks that foster collaboration, professional growth, and shared accountability. Such communities encourage the exchange of practical strategies, sustain motivation, and help institutionalise effective pedagogy.

Strengthen teacher agency and motivation: Programmes should actively empower teachers by recognising their professional expertise and providing opportunities for leadership in programme design and delivery. Enhancing teacher agency and motivation ensures greater ownership of instructional reforms and drives commitment to improved learner outcomes.

Embed programmes within national curriculum and policy frameworks: To ensure sustainability, numeracy programmes must be fully aligned with existing national curriculum frameworks and policies. Embedding them into government structures provides legitimacy, avoids duplication,

and facilitates seamless scale-up across the education system.

Ensure provision of cost-effective, high-quality instructional materials: Future programmes should guarantee the availability of affordable, durable, and age-appropriate instructional resources. Materials such as structured workbooks, number cards, and manipulatives are essential to supporting effective numeracy instruction and equitable access for all learners.

Adopt structured pedagogy with a gender-responsive lens: Programmes should incorporate structured pedagogical approaches that guide teachers step-by-step in lesson delivery. Applying a gender-responsive lens ensures that both boys and girls are equally supported to participate and excel, helping to reduce disparities in numeracy achievement.

Promote inclusivity across diverse learning environments: Design and implementation should address the full spectrum of learner contexts—rural and urban, public and private, formal and non-formal. Special attention must be given to gender equity and learners with special needs to guarantee that all children benefit from foundational numeracy programmes.

Contextualise instruction and materials: Programmes must reflect the cultural and linguistic realities of learners. Using the language of the catchment area and integrating familiar, locally-relevant examples into teaching materials enhances comprehension and bridges abstract numeracy concepts with everyday life.

Encourage co-creation of materials with

stakeholders: Developing materials collaboratively with teachers, local communities, and learners fosters ownership and ensures resources are both relevant and practical. Co-creation also builds capacity among teachers to adapt and innovate instructional content.

Integrate in-built assessment systems: Future programmes should embed assessment tools within classroom instruction to track learner progress continuously. Evidence generated from these assessments can guide teachers in adapting lessons while also providing policymakers with data to inform programme design and accountability.

Strengthen monitoring and evaluation mechanisms at multiple levels: Robust monitoring and evaluation systems should be integral to programme design. From classroom-level observations to county and national reporting, such systems provide essential feedback loops for adaptive management, ensuring that programmes remain responsive, effective, and scalable.

6.1.1 Summary of Recommendations and Timeframe

Table 6.1: Summary of Recommendations and Timeframe

Recommendation	Priority	Responsible Actor	Timeframe
Prioritise continuous teacher training and coaching	High	Ministry of Education, Programme Implementers, School Leaders	Ongoing, starting prior to programme rollout and continuing throughout implementation
Establish teacher communities of practice	High	School Leaders, Teacher Trainers, Teachers	Initiate at programme start and sustain throughout project
Strengthen teacher agency and motivation	High	Programme Designers, School Administrators, Education Authorities	Integrate from design phase and reinforce throughout project lifecycle
Embed programmes within national curriculum and policy frameworks	High	Ministry of Education, Curriculum Developers, Policymakers	During programme design and before large-scale implementation
Ensure provision of cost-effective, high-quality instructional materials	High	Procurement Teams, Programme Managers, Ministry of Education	Procurement phase, with ongoing replenishment as needed
Adopt structured pedagogy with a gender-responsive lens	High	Teacher Trainers, Curriculum Developers, School Leaders	During material development and teacher training phases
Promote inclusivity across diverse learning environments	High	Programme Designers, Teachers, Local Education Authorities	From programme inception and throughout implementation
Contextualise instruction and materials	Medium	Curriculum Developers, Teachers, Community Representatives	During material development, and regularly reviewed for updates
Encourage co-creation of materials with stakeholders	Medium	Teachers, Learners, Community Members, Curriculum Designers	Material development phase, with periodic revisions
Integrate inbuilt assessment systems	High	Assessment Specialists, Teachers, Programme Managers	Design phase and ongoing throughout programme duration
Strengthen monitoring and evaluation mechanisms at multiple levels	High	M&E Teams, School Leaders, Education Authorities	From programme launch and sustained throughout lifecycle

6.1.2 Recommendations for Improvement

Fidelity in implementation: Future foundational learning programmes should place strong emphasis on fidelity of implementation. This requires adherence to programme design, clarity of roles among implementers, and robust monitoring structures to ensure that interventions are delivered consistently across schools and counties. High fidelity reduces variation in outcomes and strengthens the reliability of programme results.

Strong government collaboration: Sustainable impact depends on close collaboration with government at all levels. Programmes should be aligned to national systems, policies, and priorities, while materials and approaches should be co-designed with relevant ministries and agencies. In addition, long-term government budgeting commitments are essential to secure continuity and scale beyond donor funding.

Teacher capacity building: Teacher preparation must move beyond short, one-off training sessions to embrace continuous professional development. Programmes should emphasise practical classroom strategies, ongoing mentorship, and motivation approaches that strengthen teacher confidence and performance. A strong teacher workforce remains the cornerstone of effective foundational learning.

Inclusivity of all learners: Foundational learning programmes should adopt inclusive strategies that address the needs of all learners. This includes children with disabilities, those from

hard-to-reach communities, and learners in private and non-formal education settings. Inclusive design ensures equity and prevents the exclusion of vulnerable groups from essential learning opportunities.

Evidence-based planning: Improvement in foundational learning requires deliberate use of evidence to guide programme design and implementation.

Baseline studies, pilot initiatives, and lessons drawn from global best practices should inform decision-making. Attention must also be given to succession planning and streamlined processes to avoid delays and bureaucratic inefficiencies that undermine effectiveness.

Flexible, context-responsive materials and community engagement: Instructional materials must be adaptable to local contexts, reflecting the language, culture, and realities of the communities where children learn. Alongside flexible resources, programmes should actively engage parents and local communities to reinforce learning at home and build long-term support for foundational education.

Holistic, system-integrated approaches: Finally, programmes should adopt a system-wide perspective that balances structured pedagogy with teacher autonomy. While structured approaches ensure consistency and coverage, teacher flexibility allows adaptation to learner needs and classroom realities. Integration within broader education systems strengthens sustainability and maximises programme impact.



7 REFERENCES

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APPENDICES

Appendix I: Key Elements of Focus Projects

Table A1: Key Elements of Focus Projects

COMPONENT	PRIEDE	TUSOME	TAYARI
Programme Objectives	Enhance literacy and numeracy outcomes (Grades 1–3); strengthen school and national management systems; focus on numeracy using Direct Instruction Method (DIM); aligned to CBE.	Improve early-grade literacy in English and Kiswahili (Grades 1–3); align curriculum, teaching methods, and resources; fully integrated with CBE and national framework.	Increase pre-primary children's school readiness (literacy, numeracy, executive functioning, SEL); develop and scale cost-effective ECD model; promote global adoption and share ECD materials; aligned with CBE.
Design Elements	High-quality, low-cost instructional materials; structured pedagogy; teacher training/support; monitoring via CSO classroom observations and tablet tracking; detailed teacher guides aligned to workbooks.	"I do, we do, you do" approach; instructional materials and teacher training; continuous support; use of tablets for teacher training support.	Numeracy Instruction Approach (active student participation, teacher training, spiral curriculum sequencing); tested ECD model; participatory and practical design.

COMPONENT	PRIEDE	TUSOME	TAYARI
Implementation Approach	Leveraged public school personnel; government funding; County CSOs for monitoring and coaching.	Emphasised demonstration, guided practice, and independent learning for students; supported by continuous teacher professional development.	Piloted and expanded ECD services; open-source materials; international sharing of lessons and activities.
Teacher Component	Extensive teacher training; use of structured lesson guides; ongoing coaching from CSOs.	Continuous teacher training and support; emphasis on practical classroom strategies.	Focused teacher training on participatory and spiral curriculum methods; active coaching.
Materials Used	Structured guides, pupil workbooks, suggested resources, weekly assessments.	Instructional materials, tablets for monitoring, continuous assessment tools.	Open-source ECD materials, numeracy lesson resources, activity guides.
Outcomes & Impact	Improved learner outcomes in literacy and numeracy; enhanced management systems.	Enhanced literacy skills among early-grade learners; clear student learning benchmarks.	Increased transition to Grade 1 with school readiness; model scalability and adoption.
Monitoring & Evaluation	Classroom observations, feedback via tablets, weekly student assessments.	ICT tools for teacher monitoring and learner assessment.	Pilot evaluations, ongoing monitoring of ECD delivery and outcomes.
Sustainability Measures	Government support, use of existing personnel, scalable materials.	Integration into national frameworks; continuous teacher development.	Cost-effective, scalable model; open-source dissemination.
Equity & Inclusion	Implemented in public and low-cost private schools; focus on broad access.	National rollout in public schools; attention to language diversity (English & Kiswahili).	Targeted pre-primary children; promoted inclusive, well-rounded development.
Costing	Low-cost materials and guides; government-funded implementation.	Cost-effective use of digital tools and scalable resources.	Affordability prioritised in ECD model design and scaling.
Key Lessons	Structured pedagogy, strong monitoring, leveraging government systems are critical for success.	Alignment across curriculum, teacher support, and assessment ensures effective literacy gains.	Active participation, scalable models, and open sharing drive sustainable early learning improvements.

Appendix II: Common/Divergent Features in PRIEDE, TUSOME and TAYARI

Table A2: Common/Divergent Features in PRIEDE, TUSOME and TAYARI

Element	PRIEDE	TUSOME	TAYARI
Programme Objectives	To enhance early-grade mathematics competence and strengthen management systems within primary schools.	To improve early-grade reading skills and literacy outcomes across public and low-cost private schools.	To increase school readiness and improve the quality of pre-primary education among early learners.
Design Elements	Focused on foundational learning, developed management system enhancements, and incorporated measures for the inclusion of special groups. Two pillars: (1) Early Grade math support; (2) Systems—centralised textbook procurement (1:1 policy), NEMIS, KEYA, TPAD, school report cards.	Included curriculum support, the development of levelled reader frameworks, and the establishment of national reading benchmarks. Structured pedagogy package: scripted teacher guides + pupil books (1:1), routine coaching, data use; scaled through MoE systems.	Adopted low-cost and scalable interventions with an emphasis on school readiness, tailored to both national and county contexts. Three treatment packages: T1 = teacher training & classroom support; T2 = T1 + instructional materials; T3 = T2 + health/hygiene content.
Implementation Approach	Executed through collaboration with government and key partners, with a strong emphasis on infrastructural improvements and instructional adaptation.	Employed joint funding models and government-led distribution of learning materials, with capacity building for education sector bodies.	Implemented in partnership with county and national governments, prioritised cost-effectiveness, and carried out in phased stages.
Teacher Component	Included ongoing professional development and support for teaching personnel.	Encompassed comprehensive teacher support, deployment of curriculum support officers, and training focused on literacy instruction.	Focused on training teachers in school readiness and early childhood pedagogy.
Materials Used	Procured educational materials targeting mathematics and provided high-quality instructional resources.	Distributed levelled readers and teaching and learning materials, achieving national reach with large-scale book distribution.	Developed materials aimed at enhancing school readiness and the overall quality of early childhood education.

Element	PRIEDE	TUSOME	TAYARI
Outcomes and Impact	Yielded improved early-grade mathematics outcomes and bolstered school management systems.	Produced significant advancements in reading abilities and strengthened the capacity of national curriculum and assessment bodies.	Resulted in learners achieving an average of three additional months of schooling compared to non-participants, and enhanced school readiness.
Monitoring and Evaluation	Utilised technology for performance tracking and school monitoring, with recommendations for continuous monitoring and improvement.	Implemented national assessments, incorporated stakeholder feedback, and applied data-driven adjustments to programming.	Engaged in ongoing evaluation processes, adapting approaches based on feedback and prioritising cost-effectiveness and scalability.
Sustainability	Ensured through strategic partnerships with the government and integration into national education systems.	Maintained via balanced co-financing, which promoted programme continuity and built local institutional capacity.	Supported by low per-learner costs, scalable design, and continued investment from the government and donors.
Equity and Inclusion	Addressed the needs of children with disabilities; highlighted the need for improved mechanisms for supporting those with less visible impairments.	Promoted inclusion in both public and low-cost private schools, advanced gender equity, and engaged communities to address social norms.	Prioritized inclusive practices and school readiness, with ongoing strategies to reach special needs groups.
Costing	Funded at a total of KES 8 billion (2015–2019), with higher personnel rates, supported by GPE and the World Bank.	Financed with USD 88.8 million from USAID, USD 62.5 million from the Government of Kenya, and an initial USD 5 million from DFID; adopted cost-saving measures throughout implementation.	Characterised by an estimated additional cost of USD 7 per learner per year (USD 14 over two years), funded by CIFF, and identified as highly cost-effective for learning gains.

Appendix III: Key Informants, Criteria for Inclusion and Response Rate

Table A3: Key Informants, Criteria for Inclusion and Response Rate

Stakeholder Category	Criteria for Inclusion	Targeted	Number Interviewed
Project Leads at National Level	Direct programme implementers at national level	3	1
Main Consultants	Directly involved in evaluation of any of the projects	1	1
MoE Senior Officers	Engaged in policy and oversight (e.g., State Department for Early Learning and Basic Education, Coordinator of Kenya Primary Education Equity in Learning Programme (KPEELP))	2	2
KICD Officers	Engaged in curriculum and material development for early grades	1	1
Math Champion Teachers	Master trainers directly involved in the project	3	3
Curriculum Support Officers	Directly involved in supporting teachers on any of the three projects	3	3
Development Partners	World Bank, GPE involved in funding/technical support; former USAID; Gates Foundation	3	1
Other numeracy programmes in the global south	Central Square Foundation (India); Centro Lemann (Brazil); Funda Wandu (South Africa); TARL (Zambia/Ivory Coast)	4	3
Global Numeracy Experts	Expert directly involved in numeracy projects	2	1
Total		22	16

Appendix IV: Summary of Variations in Learner Performance

Table A4: Summary of Variations in Learner Performance

Dimension	Findings	Implications
Region	Urban and peri-urban schools outperform rural and remote schools due to better resources, facilities, and teacher support	Sustained investment needed to address regional inequities
School Type	Private schools were sometimes excluded, leading to disparities	Inclusive policies should integrate private schools in interventions
Gender	Minimal differences observed; occasional cases of boys excelling in math and girls in reading	Gender equity largely achieved, but continued monitoring is necessary
Sub-County Level	Differences emerged due to environmental and logistical challenges	Contextualised support strategies needed for disadvantaged sub-counties
Interventions	Semi-arid regions benefited from targeted support, improving outcomes	Targeted interventions can narrow gaps when resources are directed effectively

Appendix V: Key Informant Interview Guide for Programme Lead (PRIEDE, TUSOME, TAYARI) and MoE Officials

Section A: Background

Name of the Programme.....

1. Please describe your role in [Programme Name].
2. How long were you involved in the programme?

Section B: Programme Design

1. What were the key goals of the programme?
2. What contextual factors influenced the programme design?
3. How was numeracy prioritised in the design?
4. Was the programme aligned with CBC, teacher training policy, or other reforms?

Section C: Scale

1. What factors supported or limited scale-up?
2. How was scale operationalised (national roll-out, regional focus, phased model)?
3. What role did systems (MoE, TSC, CEMASTEAs, TTCs) play in enabling scale?

Section D: Impact

1. What outcomes were observed in learner performance and teacher practice?
2. Was the impact assessed using any tool or study? What did it reveal?
3. Were there variations across regions, genders, or types of schools?

Section E: Sustainability

1. What design elements helped sustain programme outcomes after closure?
2. Was there a deliberate handover to government or capacity-building?
3. What would you consider the strongest sustainability feature?

Section F: Cross-Cutting Issues

1. Was socio-emotional learning (SEL) integrated in any way?
2. Were gender equity or inclusion issues addressed?

Section G: Lessons and Recommendations

1. What are your top lessons from this programme? e.g., what worked well and what did not work and why?
2. What advice would you give to those designing a national numeracy initiative now?



Appendix VI: Key Informant Interview Guide for Programme Curriculum Support Officers and Math Teachers

Section A: Background

1. Please describe your role in [Programme Name].
2. How long were you involved in the implementation of the programme (as a teacher or CSO)?

Section B: Programme Design

1. What were the key goals of the programme?
2. What factors influenced the introduction of the programme?
3. How was numeracy prioritised in the programme?
4. Was the programme aligned with CBE? What pedagogical approach did the programme adopt?

Section C: Scale

1. Which levels did the programme cover initially? Was the programme scaled up to other levels?
2. What factors supported or limited scale-up?
3. What role did systems (MoE, KISE, TSC, CEMASTEAs, TTCs) play in enabling scale-up?

Section D: Impact

1. What outcomes were observed in learner performance and teacher practice?
2. Was the impact assessed using any tool or study? What did it reveal?
3. Were there variations across regions, genders, or types of schools?

Section E: Sustainability

1. What elements of the programme have remained to date? (Probe: materials, instructional approach, structures? What factors led to non-continuity of the programme?
2. Were there capacity-building initiatives that continued after the programme? What structures were in place to support continuity of the initiative?
3. What would you consider the strongest sustainability feature?

Section F: Cross-Cutting Issues

1. Was socio-emotional learning (SEL) integrated in any way?
2. Were gender equity or inclusion issues addressed (Probe further, e.g. gender-responsive pedagogies, etc.)?

Section G: Lessons and Recommendations

1. What are your top lessons from this programme? e.g. what worked well and what did not work and why?
2. What advice would you give to those designing a national numeracy initiative now?

Appendix VII: Project Document Analysis Framework

Domain	What to Look For	Notes/Comments
Programme Objectives	Clarity, focus on numeracy, CBC alignment	
Design Elements	Pedagogy, delivery models, implementation structure	
Implementation Approach	National/sub-national scope, timelines, partner roles	
Teacher Component	Training, CPD, classroom support, tools used	
Materials Used	Textbooks, lesson plans, tech tools, assessments	
Outcomes & Impact	Learning improvements, reach, evaluations	
Monitoring & Evaluation	M&E framework, indicators tracked	
Sustainability Measures	Capacity transfer, policy integration, systems alignment	
Equity & Inclusion	Gender, disability, marginalisation focus	
Costing	Value for money, donor vs. government financing	
Key Lessons Documented	What internal/external reviews recommended	

Appendix VIII: Comparative Analysis Matrix

Dimension	TUSOME	PRIEDE	TAYARI	Common Patterns / Divergences
Design Approach				
Scale Strategy				
Learning Outcomes				
Sustainability Elements				
Institutional Integration				
Equity Considerations				
Use of Data & M&E				
Cost & Funding				

Reader's Notes

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Reader's Notes

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Reader's Notes

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